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14. ABSTRACT

Project CHECO was established in 1962 to document and analyze air operations in Southeast Asia. Over the years the meaning of the acronym changed several times to reflect the escalation of operations: Current Historical Evaluation of Counterinsurgency Operations, Contemporary Historical Evaluation of Combat Operations and Contemporary Historical Examination of Current Operations. Project CHECO and other U. S. Air Force Historical study programs provided the Air Force with timely and lasting corporate insights into operational, conceptual and doctrinal lessons from the war in SEA.

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PROJECT CHECO
Contemporary Historical Examination of Current Operations
REPORT

INTERDICTION IN ROUTE PACKAGE ONE, 1968

30 JUNE 1969

HQ PACAF

Directorate, Tactical Evaluation
CHECO Division

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Prepared by:

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Project CHECO 7th AF, DOAC

PROJECT CHECO REPORTS

The counterinsurgency and unconventional warfare environment of Southeast Asia has resulted in the employment of USAF airpower to meet a multitude of requirements. The varied applications of airpower have involved the full spectrum of USAF aerospace vehicles, support equipment, and manpower. As a result, there has been an accumulation of operational data and experiences that, as a priority, must be collected, documented, and analyzed as to current and future impact upon USAF policies, concepts, and doctrine.

Fortunately, the value of collecting and documenting our SEA experiences was recognized at an early date. In 1962, Hq USAF directed CINCPACAF to establish an activity that would be primarily responsive to Air Staff requirements and direction, and would provide timely and analytical studies of USAF combat operations in SEA.

Project CHECO, an acronym for Contemporary Historical Examination of Current Operations, was established to meet this Air Staff requirement. Managed by Hq PACAF, with elements at Hq 7AF and 7AF/13AF, Project CHECO provides a scholarly, "on-going" historical examination, documentation, and reporting on USAF policies, concepts, and doctrine in PACOM. This CHECO report is part of the overall documentation and examination which is being accomplished. Along with the other CHECO publications, this is an authentic source for an assessment of the effectiveness of USAF airpower in PACOM.

Milton B Adams

MILTON B. ADAMS, Major General, USAF
Chief of Staff

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS PACIFIC AIR FORCES
APO SAN FRANCISCO 96553

REPLY TO ATTN OF: DOTEC

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FOR THE COMMANDER IN CHIEF

WARREN H. PETERSON, Colonel, USAF
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FOREWORD

With the April 1968 bombing halt above 19° North latitude in North Vietnam, the Air Force Southwest Monsoon Campaign for 1968 shifted to Route Package I. For the first time, a reasonably large strike force could be dedicated to the lower North Vietnamese panhandle. The key idea during this campaign was round-the-clock bombing of a few, strategic, highly vulnerable choke points, and seeding of water crossings with magnetic mines. A significant reduction in truck traffic resulted.

[redacted]

INTERDICTION IN ROUTE PACKAGE ONE: 1968

Summary

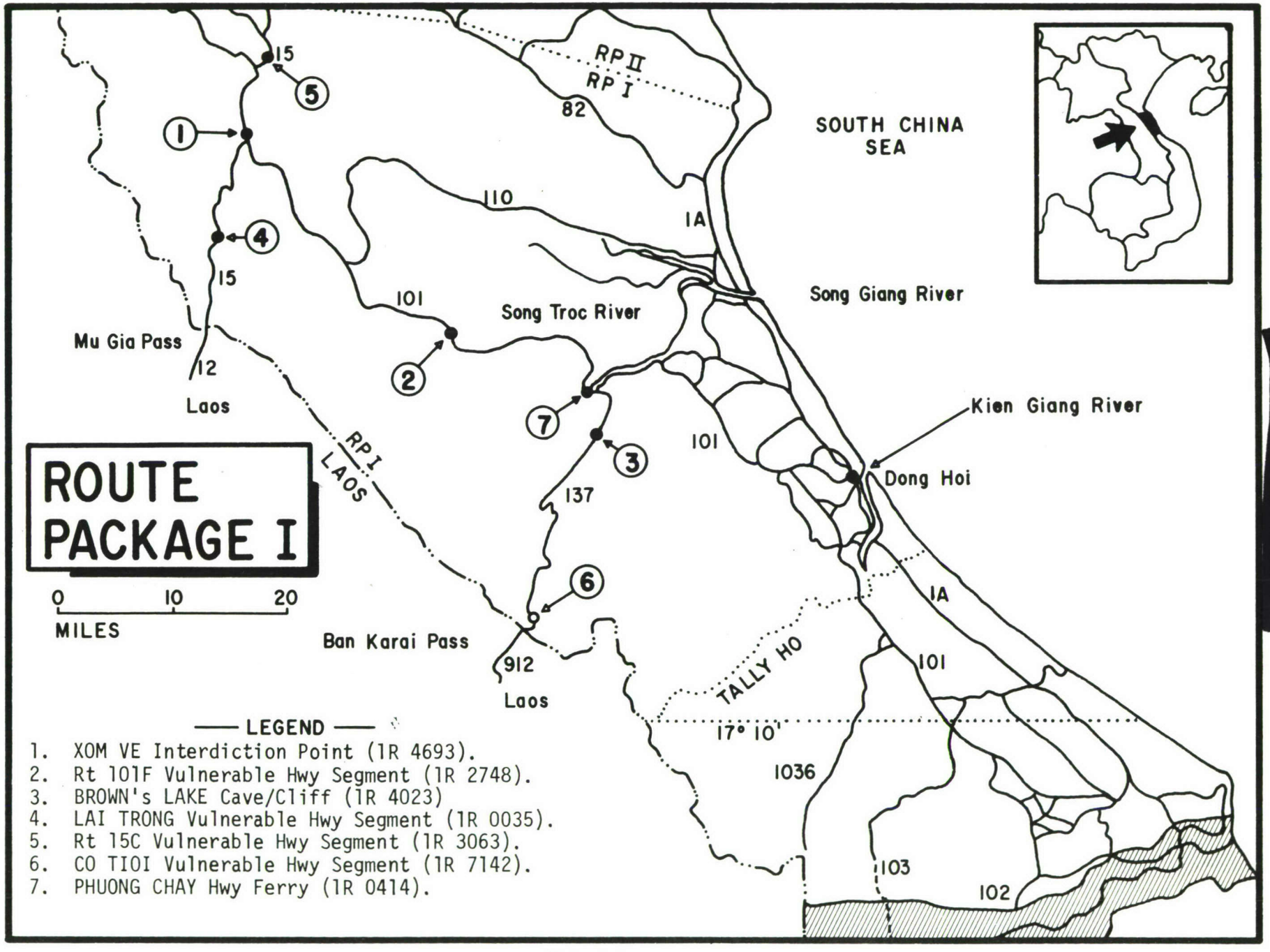
From analysis of all available intelligence, evidence clearly indicated the enemy was planning a massive logistic effort to support a major offensive in August or September 1968. As one measure to forestall this potential Third Offensive after the Tet and May Offensives, MACV asked Seventh Air Force (7AF) to develop an air campaign to counter any discovered logistic surge that might presage an I Corps enemy offensive. Captured documents indicated the enemy offensive in I Corps was to be followed by a country-wide effort. In early July 1968, a new plan--a 30-day campaign--was formalized by 7AF to cut the roads running from southern North Vietnam into Laos, and force the enemy truck traffic east onto the open coastal plain, where trucks were more vulnerable to armed reconnaissance attacks. By concentrating 24-hour strike and reconnaissance operations on three major and several lesser "choke points" in the western mountains of Route Package I, 7AF hoped to deflect logistics away from the Ho Chi Minh Trail and increase the percentage of enemy supplies destroyed within North Vietnam.

The initial 30-day campaign lasted from 14 July to 16 August 1968. In the opinion of 7AF and Pacific Air Forces (PACAF) analysts, the campaign did force trucks to the coastal roads and caused a marked increase in waterborne traffic. The plan was considered successful enough to be continued after the first 30 days as the Air Force interdiction campaign in RP-I. It ended with the 1 November 1968 bombing halt, which placed all North Vietnam off

[redacted]

limits to U.S. airstrikes.

Comparisons of 1967 and 1968 fragmentary statistics suggest the broad objectives of the 30-day plan were partially achieved. However, several variables such as enemy intentions, the varying quality of truck sighting data, and the impact of weather and moon phases demand that any conclusions be guarded and tentative. The general impression is that the enemy intention to make Route 137, over the Ban Karai Pass, the major infiltration route during the Laotian wet season was curtailed severely by the persistent closing of Interdiction Point 4023 by heavy airstrikes. Total truck sightings in RP-I dropped during the campaign at a rate greater than the 1967 data suggest might be "normal" for traffic before the rainy season of September and October. Statistics from the 7AF Weekly Air Intelligence Summary (WAIS) show truck sightings from the initiation of the plan to the end of October dropped 35 percent from the comparable period in 1967. Traffic on the two mountain Routes, 137 and 15, dropped in the first ten weeks of the plan from the level of the previous ten weeks, reversing the trend of a comparable period in 1967, when the second ten weeks led to an increase in sightings. Further, there was a significant increase in waterborne traffic sighted and destroyed. In short, the available statistics show a decline in mountain traffic and total truck sightings and an increase in waterborne traffic. Whether this seeming fulfillment of the first objective in the campaign was followed by an increase in the destruction of enemy supplies, and therefore a decrease in supplies reaching I CTZ in South Vietnam via the DMZ or Laos is more difficult to verify. Indirect evidence of the success of the campaign, however, was the


ROUTE PACKAGE I
0 10 20
MILES
SOUTH CHINA SEA
RP II
RP I
82
15
5
1
4
15
Mu Gia Pass
12
Laos
110
1A
101
Song Troc River
2
Song Giang River
Kien Giang River
7
3
101
Dong Hoi
137
RP I
LAOS
6
Ban Karai Pass
912
Laos
1A
TALLY HO
101
17° 10'
1036
103
102
LEGEND
1. XOM VE Interdiction Point (1R 4693).
2. Rt 101F Vulnerable Hwy Segment (1R 2748).
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4. LAI TRONG Vulnerable Hwy Segment (1R 0035).
5. Rt 15C Vulnerable Hwy Segment (1R 3063).
6. CO TIOI Vulnerable Hwy Segment (1R 7142).
7. PHUONG CHAY Hwy Ferry (1R 0414).

FIGURE 1

failure of the enemy to mount his planned major offensive.

The Heartland and RP-I

The vast amounts of enemy supplies available for the Tet and May Offensives made undeniable the shortcomings of earlier U.S. interdiction efforts in Laos and North Vietnam. Enemy tonnage being sent down the Ho Chi Minh Trail rose in December through May to unprecedented levels, as a majority of it reached its destination despite an increase in tonnage destroyed by airstrikes. To judge by the most important criterion--was the enemy cargo getting through--the interdiction program before June 1968 was not very successful. This lack of decisive success nourished debate within 7AF on the tactics of interdiction.

Before the April 1968 bombing halt, ROLLING THUNDER held first priority in the interdiction program. Destruction of the North Vietnamese industrial and transportation capability forced diversion of vast amounts of enemy materiel, manpower, and time to sustain homeland operations. Lines of communication (LOCs) away from the Red River were thus, for the U.S. lesser, though still significant areas for interdiction. According to the Commander, Seventh Air Force, and his Operations and Intelligence Chiefs, ROLLING THUNDER was nearing a crippling level by the end of 1967, which promised a breakdown in the enemy's economy.[1/] However, the April bombing halt removed the "heartland" from air operations, and thrust upon the air campaigns in RP-I and Laos, the responsibility for interdicting the logistic outpouring from the Red River Valley.

Interdiction combined a blend of two objectives: destroy the supplies

and cut the lines of communication. Both elements appeared in the 30-day campaign. Thus, physically closing a road would hopefully cause supply pile-ups that could be attacked and destroyed.

Several schools of thought existed within 7AF on the relative emphasis to be placed on destroying supplies versus closing choke points. The latter position rested on at least two primary ideas, both of which found particular support within the Intelligence Directorate. First, the truck kills, while they sometimes rose to impressive numerical levels, did not prevent a very significant percentage of trucks from reaching their destinations. Available forward air controllers (FACs) and strike resources were not adequate to suppress the large scale trucking operations of the enemy. The bombing accuracy and available munitions could not insure a good kill per strike ratio; therefore, certain individuals within 7AF advocated closing enemy roads rather than destroying trucks. An example of this viewpoint is quoted from the 7AF WAIS:[2/]

> *"The truck killing method of impeding flow has been found to be more expensive by a ratio on the order of 13 to 1 over the method of choking non-bypassable points. When computing the sorties required to kill trucks, aircraft attrition, ordnance expended and aircraft operating costs, the gross cost of impeding flow by this method amounts to about $13,000 per ton. Comparable costs of the 'choking' method amounted to approximately $1,000 per ton."*

Second, some experts thought experiences had shown that choke points could be closed and enemy traffic patterns disrupted. During the March and April 1968 truck surge through the Mu Gia Pass, both F-105s and B-52s were used to interdict the road system. From the sources available, especially from

FACs, came evidence that traffic was stopped in the Mu Gia Pass and forced to run through RP-I and down Route 137 over the Ban Karai Pass into Laos. The Ban Karai Pass had much less jungle canopy than the area south of the Mu Gia Pass, and hence permitted more lucrative strikes on trucks. From the F-105 and B-52 campaign evidence, the conclusion was drawn that a choke point concept could work, if a few interdiction points were carefully chosen at locations which precluded being bypassed, and if adequate strike resources were concentrated on keeping these points closed. 3/

The question arose as to whether truck kills would best be achieved at night, while the trucks were moving, or during the day when they were hidden in truck parks. Typical was the opinion found in a report on Laos published by the Office of Operations Analysis (COA). The Chief of COA "particularly recommended" the report, which addressed the superiority of truck kills and the unreliability of choke points: 4/

> *"...one can see that destroying or damaging a truck is more lucrative in terms of supplies destroyed than causing a secondary fire or explosion."*
>
> * * * * * * *
>
> *"This display (of statistics) illustrates, rather convincingly, the advantage of striking a truck in lieu of a truck park-storage area target. As can be seen, an attack against a truck yields about seven times the tonnage of supplies destroyed as does one against a truck park-storage area."*
>
> * * * * * * *
>
> *"At the beginning of the Laotian interdiction program a number of good interdiction points existed, for example, where roads passed beside steep karsts. Now,*

practically all of these have been bombed into little more than easily reparable rock piles."

* * * * * * *

"Due to the vast road and trail network, increasing I (Interdiction) to the level that it causes the enemy significant trouble solely by interdiction of road segments seems hopeless. Thus, in terms of cost to the enemy, strikes against trucks seems to offer the highest return."

These quoted sentences were a few of the many opinions on interdiction tactics that characterized the fluid theoretical environment in which the 30-day plan was conceived and evaluated.

The tactics and target priorities on the 30-day campaign had precedents in earlier planning and represented a move away from armed reconnaissance toward traffic control areas. This latter term was used by the Navy in mid-1968 for its interdiction in RP-II and RP-III. It paralleled Air Force thinking in many ways, since both services were affected by similar Rules of Engagement and enemy activities. The April bombing halt above 19° left only the North Vietnamese panhandle open to airstrikes. Formerly, the panhandle had been a secondary priority to the Red River Delta, but with the bombing halt, both 7AF and Task Force-77 (the Navy forces off North Vietnam), developed campaigns tailored to this geographically limited area of operation.

Most of the Joint Chiefs of Staff's ROLLING THUNDER targets lay north of 19° and these had received first priority in planning and execution of air operations. However, because of weather conditions farther north, in every month during the two years from October 1966, RP-I received more than half the Air Force strike sorties flown in North Vietnam. The total percentage of

North Vietnam sorties expending ordnance into RP-I ranged from 85 percent to 60 percent, the latter in June and July 1967.[5] The bombing halt made available large amounts of tac air for firm planning purposes below 19°. Time over target (TOT) could be matched against chosen enemy activities. Prior to April, many of the sorties directed into the panhandle were diverts from RP-V and VI, and arrived in the panhandle in mid-morning and mid-afternoon--the Hanoi/Haiphong TOT pattern.[6] With the April restriction in effect, and the resulting availability of firm tac air for the panhandle, the Air Force and the Navy designed campaigns to fit the geography and the enemy operations of Route Packages I, II, and III.

Thus, the roots of the 30-day campaign--and what it was and was not--lay in the ROLLING THUNDER Campaign of 1967-1968. In March 1967, Lt. Gen. William W. Momyer, the Seventh Air Force Commander, directed his staff to draft an integrated campaign plan for anticipated North Vietnamese good weather during the Southwest Monsoon. This plan would view the out-country air war as an interrelated whole and consolidate into one plan the several Operations Plans (OPlans) and Operations Orders (OpOrds) which had multiplied with the expanding war. It would coordinate a campaign to produce, according to General Momyer, "maximum psychological and physical effort on the enemy in his heartland".[7]

Called Operation COBRA, the plan designated the enemy heartland as the highest priority and termed it the key to the interdiction of logistics in North Vietnam. Yet, in the words of the Chief of the 7AF Combat Plans Division:[8]

"The plan recognizes that a timely effective program of interdiction against logistics movement in NVN cannot be conducted in Route Package V, VIA, and VIB. This is true for two primary reasons. These are (a) the maze of inter-connecting routes make bypass possible under almost any circumstance and (b) lack of clearance to close the port of Haiphong. However, the plan also recognizes that there are valid reasons for continuing operations in the enemy 'heartland.'"

The panhandle area, especially in RP-I, would be an "adjunct" to interdiction in the North. When diverts came from the Red River Delta, they would strike logistic concentrations and not LOCs, since roads, bypasses, and waterways were too numerous. But "temporary movement bottlenecks" were to be made with diverts only, if more suitable logistic targets could not be found.[9/]

To accomplish interdiction while devoting first priority to the heartland, the plan proposed two "interdiction belts" be recognized where enemy LOCs were vulnerable to natural features. The Bai Thuong/Thanh Hoa Canal-River complex (20° N) was the prime example, because it lay squeezed between the mountains and the sea. At Vinh, 70 miles to the south, the Song Ca River made a second potential "interdiction belt". Both lay in RP-III/IV, the Navy area of responsibility, and thus COBRA, which proposed major operations in the Navy area, was indeed viewing the war as a whole. Heavy SAM/AAA suppression would make the belts more permissive to airstrikes on bridges, ferries, railroads, and truck parks (LOCs), and enhance the night armed recon capability.[10/]

Operation COBRA was briefed to Gen. John D. Ryan, CINCPACAF, in April. He agreed with the concept of publishing a Southwest Monsoon Plan, but objected to the interdiction belts, because they would detract from other missions.

According to a 7AF memo for record, "General Ryan wanted the interdiction emphasis placed on destroying trucks and rolling stock and not on interdicting lines of communications".[11/] The Navy, when the plan was presented to the Pacific Fleet and TF-77, objected to the portion on Air Force operations in a Navy area, and made it clear that the plan was not satisfactory.[12/] Operation COBRA was never conducted beyond this stage.

The concept of a campaign plan, however, was pursued by 7AF with the publication of a much less ambitious 1967-1968 Northeast Monsoon Campaign (OPlan 512-68, 15 Sep 67), which summarized the Air Force objectives and concept of operations. The 1968 Southwest Monsoon Campaign (OPlan 530-68, 1 May 68) was the second and expanded plan. The third, the 1968-1969 Northeast Monsoon Campaign (OPlan 512-69, 1 Nov 68), specifically superseded the basic plans for ROLLING THUNDER, BARREL ROLL/STEEL TIGER, TIGER HOUND, TALLY HO, SLAM, COMMANDO NAIL, and the previous Northeast Monsoon Campaign.

The 1968 Southwest Monsoon Campaign plan for May through October provided the framework for the 30-day plan developed later. Although published a month after the April bombing halt, the campaign plan reflected its having been drafted prior to the cessation. The northeast sector of the Red River Valley and the railroads to China were to be the "major areas for concentration of USAF/USN air operations".[13/] However, RP-I was allocated 31 percent of the strike and Combat Air Patrol (CAP) out-country sorties for planning purposes, and the wording of the general plan seemed to reflect some increased emphasis on the interdiction of LOCs:[14/]

> *"Air operations will concentrate on traffic, logistic concentrations and critical points on the LOCs. Key*

waterways and LOC choke points will be seeded with time delay and long-life mine type munitions."

Yet, the plan stipulated that due to enemy bypasses and alternative routes in RP-I, "the area offers relatively poor interdiction targets".

After the bombing halt of April, the large concentration of effort on the "heartland" had to be reoriented to RP-I. During May and June, much of the revised planning being done dovetailed with the later MACV request for a campaign plan. At the same time, the Navy shifted its operations solely into RP-II and III and developed the concept of Traffic Control Areas.

The Air Force did not use the Navy concept of Traffic Control Areas, but even before the 30-day campaign, it did select certain vulnerable road and water segments for special interdiction emphasis. For instance, the Song Giang/Song Troc River system was mined with MK-36s to harass sampans, while the ferry landings and bridges were repeatedly bombed to disrupt truck traffic. Rather than call certain targets "Traffic Control Points", the Air Force targeting system identified all lucrative targets as "TIGER Targets" with an area code such as "1R" or "5R" for RP-I or RP-V, followed by number designations for the particular site. The TIGER Target lists provided 7AF with a uniform target nomenclature and superseded use of numbering systems of the Armed Reconnaissance Targets (ART) and Royal Laotian Air Force (RLAF) targets. This system gave each 7AF target a common reference number, and retained JCS and 7AF ART numbers as cross reference items. New TIGER Targets were assigned working descriptions or names as appropriate. Although TIGER Target listings originally included all lucrative targets, both fixed and fleeting, it rapidly

became apparent that fleeting targets did not belong in the TIGER program. The publication of 7AFR 200-13 defined TIGER Targets as worthy fixed targets. All fleeting targets and items not considered worthy of strike were deleted from the lists.

Targeting in RP-I was done by the Strike Branch (Directorate of Targets, Intelligence), which was physically located in the 7AF Headquarters, across the hall from the TIGER HOUND-TALLY HO Division (Directorate of Combat Operations, Operations), which fragged and controlled Air Force and Marine tac air in RP-I.[15/] Prior to the 19° bomb halt, the TIGER HOUND-TALLY HO Division was assigned to the Tactical Air Control Center, the in-country system. With the removal of the Red River Delta from strike operations, on 19 April the command structure was realigned to put TIGER HOUND-TALLY HO in out-country operations.[16/]

Strikes were fragged against targets based on their vulnerability, lucrativeness, and relationship to the armed reconnaissance program. As an example of how pervasive were the strikes against the more lucrative targets in RP-I, it is useful to look at the ROLLING THUNDER Target List--the list of high priority and politically sensitive targets authorized by the Joint Chiefs of Staff. According to an article in the 7AF WAIS, after the early April bombing halt, there were 69 ROLLING THUNDER targets in RP-I. Of these, 64 were "unserviceable, abandoned, or not considered worthy of strike". Therefore, nearly all of the RP-I effort north of TALLY HO was armed recon prior to the 30-day campaign.[17/]

Navy Interdiction

The Navy also ran an interdiction program in North Vietnam, one that mirrored many of the Air Force experiences. Most notably, Navy planners of the Seventh Fleet came to see the diluting effect of "random fragging" against lucrative targets on what they termed "pure interdiction"--the bombing of rail and road bridges, natural choke points on road and rail lines, truck parks, and rail yards. Plentiful Asian manpower quickly repaired or bypassed the damage. By 1968, Navy planning recognized that Navy air must not be spread too thinly. A CINCPACFLT message to CINCPAC made this point: 18/

> *"Weakness in past interdiction efforts may be attributable to the wide-spread attacks over the entire NVN/Laos countryside, with no prolonged concentration on any one LOC area. Poor weather and finite strike resources have been the primary limiting factors. Without continual presence at an interdiction point, the enemy soon rebuilds or by-passes the area."*

To achieve continual presence at an interdiction point, the Navy applied the concept of Traffic Control Areas (TCA). These areas lay across important enemy transportation lines. North Vietnam had eight such TCAs, while Laos had four. Each TCA had many Traffic Control Points (TCP), each chosen for vulnerability to airstrikes, difficulty of being bypassed, importance to enemy logistics, distance from civilian population, and threat of SAM/AAA. Ideally, such points were away from populated areas to lessen civilian casualties and increase the difficulty of getting road repair crews to the TCPs.

In the three TCAs located between 18° and 19° (the Navy RP-II and III),

there were 51 TCPs, classified as to water points, ferries and bridges, and vulnerable road segments. In mid-1968 with the prohibition against bombing north of 19°, each of the three carriers off North Vietnam on Yankee Station had responsibility for a TCA.[19/]

In RP-I, the Navy recognized the "Dong Hoi" and "Ho Chi Minh" TCAs. South of Dong Hoi, the coastal sand dunes and the Kien Giang River were potential trouble spots for Route 1A and coastal truck traffic. In the western mountains, the Ho Chi Minh TCA contained the Nape, Mu Gia, and Ban Karai Passes, plus the Route 102/103 complex into the DMZ. The Navy plan foresaw heavy airstrikes and MK-36 seedings on such interdiction points to provide long-term presence toward stopping road crew repairs.[20/]

Navy tactics called for bombing the chosen TCP with heavy general purpose bombs, and then seeding the areas with MK-36 500-pound magnetic water mines. Designed for waterways, the mine was used also as a road mine, though with uncertain efficiency. To achieve surprise, the bombing/seeding operation was to take less than 24 hours. Average TCPs required 120 mines; large ones used 250 mines. The estimated maximum stoppage of through traffic by MK-36s was three to four weeks, and the Navy relied heavily on this weapon for roads and especially for waterways and fords. In the second quarter of 1968, the Navy dropped more than 20,000 MK-36s in North Vietnam and planned for 13,000 per month by mid-1968.[21/]

The Navy judged its traffic control point and continuous surveillance program successful. By early August, it could speak of a 36 percent drop in traffic in the southernmost TCA in RP-II, with truck sightings falling from

76 per day to 46 per day.[22] The Navy essentially stopped truck traffic coming from RP-II via coastal routes into RP-I and, instead, forced it to funnel along the mountain roads. Brig. Gen. George J. Keegan, Deputy Chief of Staff/Intelligence, 7AF, had high praise for the Navy's accomplishment, and credited it with greatly simplifying the Air Force's 30-day campaign.[23]

Logistic Surges

In the first half of 1968, the armed reconnaissance program in RP-I did not lack for truck targets. In the first two weeks of the year, a total of 2,902 trucks were sighted in RP-I, a heavy surge effort presumably related to the siege of Khe Sanh later in the month. Week after week, the traffic continued heavy, though at a lower level, as supplies moved south to provision and arm the several North Vietnamese Army (NVA) divisions that had crossed into I Corps. In April, there was another peak of sightings--a combined total of 2,475 truck sightings in two weeks. Placing these statistics into perspective for ten comparable weeks from May to early July 1967 and 1968, the weekly averages were 171 and 382, respectively.[24]

From these weekly truck sightings, two patterns emerge. First, there were apparent surge efforts by the enemy in January and April. Second, the total truck sightings for 1968 were running far ahead of 1967. In the total enemy logistics effort into South Vietnam, a similar pattern emerged.

According to General Keegan, the enemy moved large amounts of supplies through Laos immediately prior to the Tet Offensive in February and the May Offensive.[25] This offensive activity, approximately one-to-two months after a surge in logistic flow through NVN and Laos, was noted at the time by

Intelligence and Operations personnel at 7AF and MACV. It was carefully studied for traffic patterns that might signal preparation for future offensives.

Such thinking was later formalized in detail by Col. Benton K. Partin, Director of Tactical Analysis, 7AF. In his view, the frequency, intensity, and duration of an enemy offensive was partially related to the success of the "pre-stockage" or surge effort. Also, when the offensive began in-country, the out-country supply efforts dropped off, "a probable indication of resupply and manning limitations imposed by both out-country interdiction and in-country ground and air operations." Figure 2 summarized the major evidence by plotting the weekly total out-country truck sightings against weekly in-country friendly/enemy casualties. The latter reveals the enemy offensives. In the opinion of Colonel Partin, the marked increase in sightings in March and April, and the sharp drop before the May Offensive, "most explicitly" revealed the interdependence of the in-country and out-country enemy operations. Of course, it was believed truck traffic in Laos surged in April and dropped rapidly in May with the coming of the rains.[26/]

Theoretically, if all such variables as troop strength and seasonal weather patterns are held constant, an enemy suffering from food and ammunition shortages would be forced to limit his offensives by any of three means. Reducing the intensity would appear in the statistics as fewer casualties. Shortening the duration would be revealed by a quicker return to "routine" casualty levels. Lessening the frequency would increase the intervals between the peaks of the offensives.

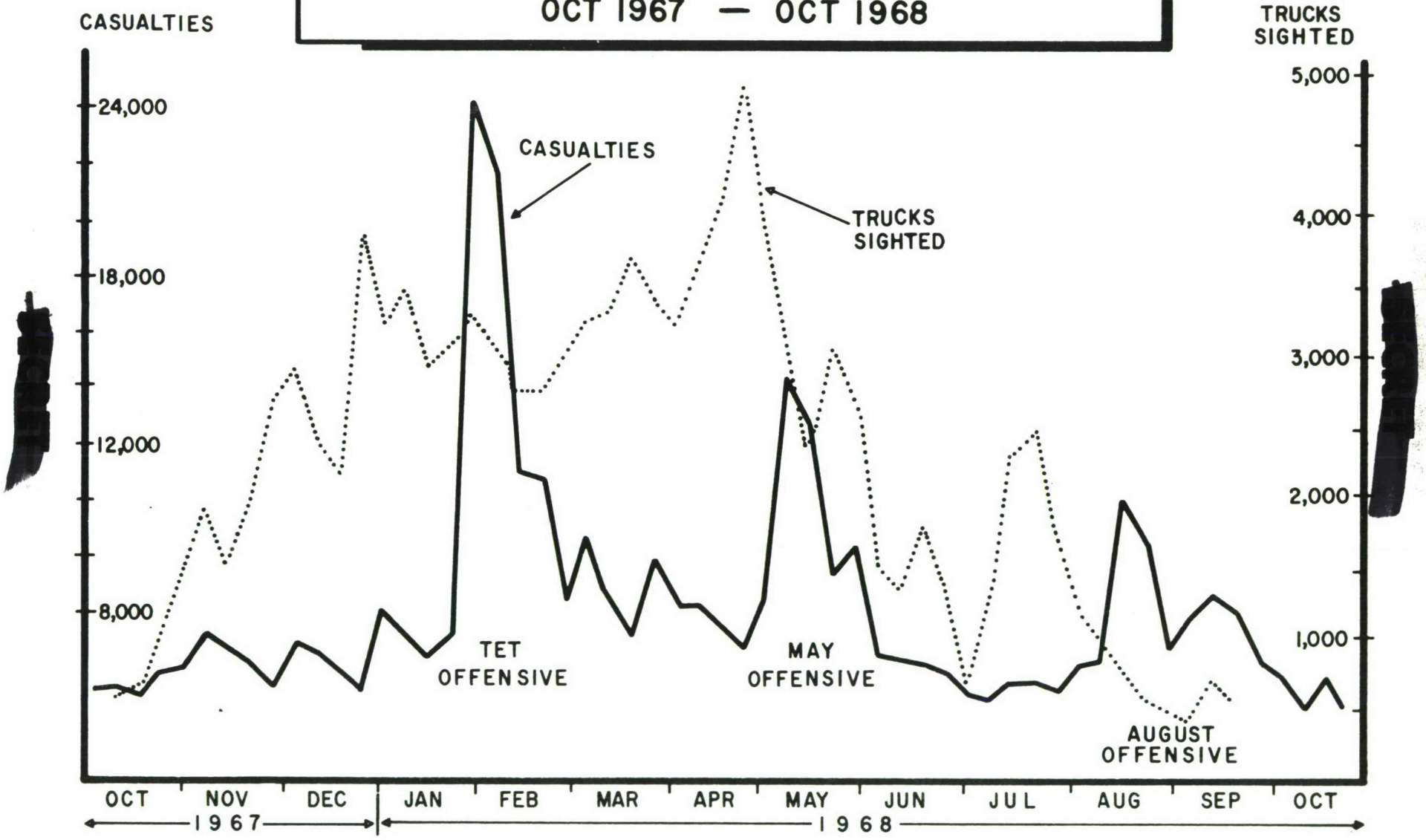
An examination of Figure 2 shows a definite drop in intensity and some shortening of duration. The frequency between offensives was essentially unchanged. These suggestions of enemy faltering might well have been caused by supply shortages, especially since the NVA troops were much less able to forage off the land than were the Viet Cong guerrillas, and thus the NVA were more dependent upon traditional lines of supply. As of 30 June 1968, there were an estimated 80,000 NVA in South Vietnam.[27/]

The reduced enemy offensives might also have been attributable to political strategy on the enemy's part, to severe losses among the hard-core cadre, to a need to train replacements, or to increasing allied effectiveness in seizing caches that sustain offensives. This latter point meant that the enemy could have adequate supplies in-country, and yet be prevented from positioning them near the cities.

In his unpublished paper on enemy pre-stockage surges, Colonel Partin went beyond identifying the pattern and recommended that in-country/out-country sortie allocations more closely match enemy activities.[28/]

> *"The cyclic pre-stockage--offensive--pre-stockage--offensive...sequence of enemy operations offers opportunities for major increases in force effectiveness by changing the in-country/out-country sortie allocations so as to have the greatest impact on the enemy, and at the same time, reduce friendly losses. During periods of enemy pre-stockage and resupply, there should be a major shift of strike and FAC resources to the interdiction mission. During periods of enemy in-country offensives, there should be a shift to increased close support sorties. An early shift to interdiction sorties during an enemy build-up phase could negate or postpone scheduled offensives."*

IN-COUNTRY FRIENDLY/ENEMY CASUALTIES COMPARED WITH OUT-COUNTRY TRUCK SIGHTINGS OCT 1967 — OCT 1968



SOURCE: 1ST LT DANIEL T. KING, DOA, 7AF

FIGURE 2

This concept reflected the thoughts of certain officials within 7AF, and had already been at least partially implemented in the 30-day campaign. That is to say, the 30-day campaign sought to mass airpower against an expected enemy surge, and thereby blunt the predicted August offensive in I Corps.

Concern over such a late summer offensive stemmed in part from the improved road system being built in RP-I to shorten the infiltration route around the DMZ into I Corps. In 1965 and 1966, the Ho Chi Minh Trail had run through the Nape (18° 23' North) and Mu Gia (17° 40' North) Passes, and then south along Laotian Route 23 through lowland populated areas. Route 23 was vulnerable to flooding and to monitoring by Laotian troops. Moving the Trail east into the foothills would lessen both problems. Thus, Route 911 was reconditioned and expanded from the Mu Gia Pass to Tchepone, a Laotian town southwest of the DMZ.[29/]

Much of the NVA tonnage was then sent through the Mu Gia Pass. But this was not yet satisfactory, since flooding was still a problem and nearly total reliance on one pass was a dangerous concentration of effort. So in 1967, the NVA opened Route 137, which crossed into Laos at 17° 16' North. Truck traffic on Route 137 was first sighted in late March, but did not become significant until August 1967.[30/] In 1968, the pattern of road building was again repeated when the NVA began construction of Route 1036, a brand new road through virgin mountain jungle, evidently intended for use in crossing into Laos at about 16° 58' North, thus just skirting the DMZ. Route 1036, when finished, would enter Laos a full 70 miles south of the Mu Gia Pass and reduce reliance on the whole Route 911/23 complex.

Halfway between Dong Hoi--the largest town in RP-I--and the DMZ lay Bat Lake. From the lake, Route 1036 left the coastal road network and struck southwest. Intelligence reports first mentioned the road in January 1968 and photography in March showed construction moving rapidly through the relatively flat terrain. Photos also confirmed the use of bulldozers. Construction was very closely watched by O-2 TALLY HO FACs flying out of Da Nang, and in early May, they reported a construction rate of one kilometer a week. More than halfway to the Laotian border, the road crossed the Long Doi River and entered extremely rugged mountains. As of mid-June the northern segment was in an intermediate-to-advanced state of construction, but the portion south of the river was still in a primary to intermediate stage. The intelligence evaluation in late June was given in a 7AF WAIS summary:[31/]

> *"Within recent weeks, activity has continued along this road, with the North Vietnamese continuing to push it further southward. FACs have reported dark colored surfacing on the southern extremity. The rate of construction has slowed in the rugged mountains compared to its rapid pace along the more level northern portion. As the road leaves the mountains in the next few weeks, its rate of construction is expected to increase considerably."*

Despite the pessimistic intelligence estimate, photography indicated the Bat Lake Road experienced no further development or extension after June. The threat of its completion and the development of another entry route into Laos and the DMZ, however, were cause for grave concern at both 7AF and MACV headquarters. Even as June construction progressed on the Bat Lake Road, enemy traffic on Route 137 rose far above the 1967 level. In eight weeks of May and June 1967, visual sightings were reported of 186 trucks on Route 137. In eight weeks of the comparable period in 1968, there were 1,547 sightings.[32/]

Early in the 1968 season, the NVA had provided considerable maintenance of the fords along Route 137, and had laid gravel and built culverts to improve the all-weather capability.[33/] Since the Route 23/911 complex in Laos was most affected by heavy seasonal rains in August and September, it appeared, in view of the May and June surge, that Route 137 might replace the Mu Gia Pass as the primary July and August entrance into Laos from RP-1.

Besides the broad traffic surges related to in-country offensives and seasonal variation in the Ho Chi Minh Trail, there was also a smaller cyclic traffic pattern within RP-I (Fig. 10) related to the moon phases.* The cyclic variation of traffic with the phase of the moon applied principally, however, to visual sightings.

Beginning in July, the F-100 Misty FACs became intimately acquainted with RP-I and how the enemy ran the gauntlet between RP-II and the Song Tree River.[34/] The Misty FACs distinguished two truck patterns: a limited shuttling along the major roads to service AAA and road repair crews, and a large scale long-haul operation from RP-II to central RP-I. The local shuttle seemed to account for the rather low but steady number of trucks seen during the day, and for the usual 10-15 empty trucks often parked along the major routes. The long-haul operation accounted for the surges in the dark of the moon.

In the center of Figure 1 is the interdiction point labeled #7--the Phuong Chay Highway Ferry--situated in the middle of RP-I. (See also Fig. 9.) South

* The 37th TFW prepared a study on traffic patterns in RP-I.

of the river is Delta 74, a "safe haven" of jungle and camouflage the FACs suspected of being capable of concealing up to 200 trucks and yet "present no lucrative targets". From Delta 74, some supplies were dispersed into the local area, while others continued the logistics flow west on Route 137 or southeast down the coast.

To reach this safe haven, the enemy collected hundreds of trucks on Route 15 inside RP-II, and organized them into convoys of 75 to 100 for the 87 mile, six-to-nine-hour trip south to Delta 74. The 37th TFW study detailed one such peak surge from 19-23 July, when more than 300 trucks were sighted moving down Route 15/101, hauling an estimated 600 tons of supplies in five days. Sensor-detected traffic in Laos near Ban Karai Pass also showed several hundred trucks entering Laos in this same time frame. This traffic surge was unique in its suddenness and size. It was not repeated.

A convoy of 75-to-100 trucks started south between 1930 and 2000 hours, traveling about 100 meters apart on the straight road and bunched on the switch-backs and fords. Around 2230 hours, the pontoon bridge, stored in a river cave at Phuong Chay was floated into place. By 0030 hours, nearly 50 trucks might be backed up, waiting to cross the bridge. During the five-night surge, there were no trucks sighted moving through the Mu Gia Pass, only light-to-moderate traffic on Route 137, very heavy sensor-detected traffic south of Delta 74, and no SLAR-reported traffic on Route 1A on the coast. (SLAR pertained to the Army OV-1 Mohawk with side-looking airborne radar that patrolled the RP-I coast.) After the surge, FACs observed small 10-to-20 truck convoys moving north for the next 10-to-15 nights. When traffic was heavy, the roads

had essentially one-way traffic.

This pattern of cyclic resupply periods tied to the moonless nights was a simplified model of northern RP-I traffic. A similar, but smaller, pattern occurred on Route 82. Also, heavy traffic was sometimes sighted on moonlit nights. For instance, on 31 July, 50 trucks were spotted on Route 101 and attacked with negligible results. But during 100 percent moonlight, very few trucks moved, as from 5-10 August, when SLAR reported 10-to-15 trucks a night in the Delta 74 area, and the FACs observed a few on Route 82.[35/]

If the Misty FACs diagnosed the enemy traffic pattern correctly, it should be apparent that closing Routes 15 and 101 at choke points would sharply curtail the surge infiltration efforts. Further, if these choke points could be kept sealed, then the empty trucks would be unable to return north easily. Thus the shuttle would be broken. The 30-day campaign did keep certain choke points closed significant amounts of time and the late August surge did not materialize. Sensor-detected traffic in RP-I showed a decrease on only one day due to Tropical Storm Rose. Bess, on the other hand, brought the already low traffic levels caused by successful interdiction of the key choke points virtually to a standstill for two or three weeks when it struck on 3 September 1968. Many of the worst washouts occurred where roads had already been severely bomb damaged by the air interdiction effort. Weather conditions did not significantly affect truck traffic during August, but a combination of weather and interdiction completely disrupted logistic flow in RP-I in September. Weather conditions, however, were not a major factor until 3 September.

Thirty-Day Plan

Intelligence sources in mid-June reported a possible Third Offensive in I Corp in about two months. The 432d Tactical Reconnaissance Wing at Udorn was directed to fly a comprehensive photo survey of RP-I with special emphasis on locating non-bypassable points. IGLOO WHITE sensors were emplaced to determine traffic flow patterns. The target section of 7AF ran a crash effort to develop targets for a concentrated interdiction effort to pre-empt the offensive. By the direction of General Momyer, along with the active interest of COMUSMACV, a plan was developed within the intelligence and operations sections to isolate the northern part of RP-I from the southern portion. To do this, traffic would be stopped on the mountain roads and the north-south coastal traffic would be interdicted at the Song Giang/Song Troc River system. 36/

Turning enemy traffic toward the coast was neither new nor original. Col. Robert Pater, Chief, TIGER HOUND/TALLY HO, 7AF, termed it "self-evident" given the particular circumstances. Several plans for seeding MK-36s on RP-I roads had previously been drafted within 7AF to impede traffic on the mountain routes, but those plans did not propose cutting roads in the manner of the 30-day plan. However, once the April bombing halt placed RP-V and VI off limits, a large number of out-country sorties became available for RP-I on a steady basis to conduct a sustained operation. Prior to April, large numbers of strike sorties had gone into RP-I, but a significant number were diverts from farther north, and often lacked appropriate ordnance for road interdiction. Thus, the April halt did not force a revamping of interdiction efforts in RP-I, as much as creating circumstances whereby the sustained choke point concept

could be employed.[37]

A similar concept had been tried before in a general way. GATE GUARD, initiated on 1 May 1966, proposed to create "gates" across RP-I that would bottleneck the traffic during the day and permit more lucrative strikes at night. By starting with the southern "gate", the plan foresaw rolling back enemy supply lines. Results were not spectacular, though night truck kills were higher than daytime totals. There seems to have been little attention given to keeping the "gates" closed at night.[38]

Preventing the enemy road crews from repairing bomb cuts at night was the crux of the 30-day campaign, and the determined planning toward that goal was perhaps the most original ingredient of the plan. Keeping a road closed was no mean task, as was shown in the HUB operation run during 14-25 March 1967 on Route 911 in Laos. At the interdiction point called HUB, daylight strikes cut the road, and the FACs provided 24-hour surveillance of the immediate area. Strike aircraft were available to attack repair crews or other acquired targets. The night aircraft included the C-130 Lamplighter, the C-123 Candlestick, the A-26 Nimrod, the O-1 Birddog, and the F-4C night aircraft. Yet, this impressive night capability with Starlight Scope was unable to keep the HUB closed for more than a few short hours at night. One of the conclusions of the 7AF study on HUB was significant for the future 30-day plan:[39]

> *"Night Hub data show that truck hunting operations caused a division of effort from presence at the Hub and allowed road repair and some traffic to move through the Hub. The truck hunt operation of course was intended as part of the operations concept."*

The basic concept of the 30-day plan was fleshed out in early July, even as a massive SLAM effort was being conducted against enemy gun and AAA positions in, and north of, the DMZ from 1-7 July. Toward the end of this Operation--THOR--General Momyer, at the urging of COMUSMACV, directed the creation of a detailed interdiction plan to follow the SLAM. On 9 July, the plan was briefed to Gen. Creighton W. Abrams, COMUSMACV.[40/]

Specifically, the campaign plan, which began on 14 July 1968, was to last 30-days. Two interdiction points--one each on Routes 15 and 137--and four river transportation points were chosen to be cut during the day and harassed at night. Area denial weapons, including general purpose bombs, would keep repair crews away from the road cuts. Area denial weapons would be dropped at night to destroy supplies, trucks awaiting ferrying, and sampans. Five strikes a night were planned on each point. About half the planned sorties against the interdiction points could not be diverted and during bad weather these reserved sorties would use COMBAT SKYSPOT. Armed reconnaissance was scheduled to exploit traffic backlogged behind the choke points, and to strike the increased truck traffic expected on the coastal roads. F-4s with flares or SLAR intelligence were to attack "movers", the intelligence jargon for vehicles and watercraft. The Marine A-6s also had this mission, using their moving target indicator radar.[41/]

To further impede traffic on the coastal LOCs, MK-36s would be dropped at ferry crossings and in the rivers and fords. Ferry landings would be harassed with CBUs and MK-36s. To divide RP-I, as envisioned by General Momyer, the Song Giang/Song Troc River complex was chosen for several reasons, rather

than the Kien Giang River farther south. The Song Giang/Song Troc lay 35 miles farther north of the Kien Giang, thus limiting the coastline for truck-to-boat activities, and permitting a concentration of tac air, armed recon, and naval gun fire along a shorter coast. Also, the Song Giang/Song Troc was wider and thus more vulnerable to air attack.[42]

The five phases of the plan were:[43]

- SAM/AAA suppression, primarily for ARC LIGHT.
- ARC LIGHT against enemy bases and assembly areas.
- Interdiction against key road and river points.
- Armed recon along the LOCs and on targets of opportunity.
- Tactical recon throughout the operation for pre-strike intelligence, surveillance, and BDAs.

Exact projected sortie totals varied as the plan evolved. The 9 July briefing included the following daily breakout:[44]

24	F-4/F-105 strike sorties against SAM/gun positions
24	B-52 sorties in six-ship flights against four target boxes
66	Interdiction sorties against choke points
122	Armed recon sorties on 24-hour schedule with major effort on coastal LOCs (74 day and 48 night).
34	Tactical recon sortie using RF-4s, F-100 Misty FACs O-2s, and OV-1s (SLAR)
24	ARC LIGHT protection sorties
	4 EB-66 for ECM against MIGs
	8 MIGCAP F-4s between ARC LIGHT strike area and 19°
	4 F-102 escort
	8 F-105 IRON HAND to counter radar controlled weapons
294	

According to one chart of the briefing, a total of 270 sorties were planned, divided into 207 day and 63 night sorties. This total of 270 sorties excluded the 24 ARC LIGHT support sorties. Another chart stated that if all forces were included, such as EC-121 sensor aircraft and KC-135 tankers, a total of 307 sorties a day were planned.

ARC LIGHT

When COMUSMACV requested an interdiction plan in RP-I, he tentatively made available 30 ARC LIGHT sorties a day for planning purposes. Therefore, 7AF hoped to put heavy ARC LIGHT strikes on non-tac air targets such as enemy base and assembly areas under jungle canopy. To do this, 34 sorties a day were proposed to General Abrams in the 9 July 1968 briefing. This would have required 24 support sorties a day for ARC LIGHT protection, comprised of four EB-66 sorties for electronic countermeasures, eight MIGCAP F-4s shielding the strike area from MIGs north of 19°, eight IRON HAND F-105s to strike radar-controlled weapons, and four F-102s as escorts.[45/]

Seventh Air Force ran a special reconnaissance effort to generate ARC LIGHT targets in RP-I and the nearby Laotian areas. Much of the out-country reconnaissance resources were involved in this target effort, one of the largest ever conducted by 7AF.[46/] More than 96 target boxes were developed for ARC LIGHT missions of six ships each. This compressed targeting concept was used on the advice of Strategic Air Command (SAC) to reduce time over target, increase efficiency of support aircraft, and maximize impact on the enemy. Strategic Air Command (SAC) was dissatisfied with the low BDA from ARC LIGHT strikes against interdiction targets such as targeted in TURNPIKE earlier in

the year in Laos. Thus, "a large, identified logistical support base or major transshipment point..." is favored.[47/]

A complication arose concerning the original targets because CINCPAC, in coordination with CINCSAC, had authority to fly ARC LIGHT into North Vietnam only up to 17° 10'. That excluded all of RP-I outside TALLY HO and the northeast quarter of TALLY HO. Unfortunately, of 84 specific targets, 35 were in RP-I, north of TALLY HO, and hence above the line. These targets had been given first priority. A great many lay around Bat Lake, north of 17° 10'.[48/] Permission to strike north of 17° 10' had to come from Washington, and on 15 July the JCS informed CINCPAC that the Deputy Secretary of State wanted the plan sent to the White House due to "possible impact upon negotiations in Paris".[49/] No strikes were made north of the line. Therefore, the total of 124 ARC LIGHT sorties eventually flown in the first 30 days in RP-I/TALLY HO were not put into the interdiction areas on Routes 15 and 101, or around Bat Lake.[50/]

The inability to strike with B-52s north of 17° 10' did have one advantage in that far fewer tac air support sorties were required. An estimated 20 tac air sorties were needed for an 18 aircraft B-52 mission below the line and an estimated 96 above 17° 10'. The added protection was for corridor suppression of known SAM sites. Flying only four, rather than 24 ARC LIGHT sorties a day during the 30-day period, freed large amounts of tac air.[51/]

Choke Points

Route 15 was a two-lane, unsurfaced road of numerous fords and small

bridges easily bypassable. It crossed into Laos through the Mu Gia Pass. Just north of the junction of 15 and 101, the road wound in a single lane through karst hills with sharp switchbacks.[52] (Karst is a region of jagged limestone ridges, sink holes, and underground streams.) This particular point--Xom Ve Interdiction Point (1R-4693)--is shown in Figures 6 and 7. (See also Fig. 1.) In the first two weeks of the campaign, it was closed an estimated 30 percent of the time.[53]

Since Route 137 was newly constructed and crossed rugged terrain, it lacked bypasses around the several good interdiction points. Co Tioi Vulnerable Segment (1R-7142) was described in an intelligence working paper as "one of the finest interdiction points" in RP-I, having a double switchback five miles north of the North Vietnamese/Laotian border.[54] This secondary interdiction point was not chosen until late in the campaign. In late June, the 432d TRW had made an intensive photo survey to locate the best interdiction points. One recommended was 1R-4023, a roadbed cut around a karst cliff over a river that disappeared into a cave under the cliff. Figure 3 shows the area prior to the 30-day campaign, revealing an unstruck target. Among aircrews, it was informally called "Brown's Lake" after Col. Frederick I. Brown, Jr., Chief of Intelligence, 432d TRW, because of his early hope that bombing the cave would dam the river and flood the road.[55] That never happened, but a heavy rain would back up a temporary pool. "Brown's Lake" became the most successful interdiction point in RP-I and remained closed an estimated 60 percent of the time in late July.[56]

Routes 15 and 137 were connected by Route 101, a two-lane, unsurfaced

[redacted]

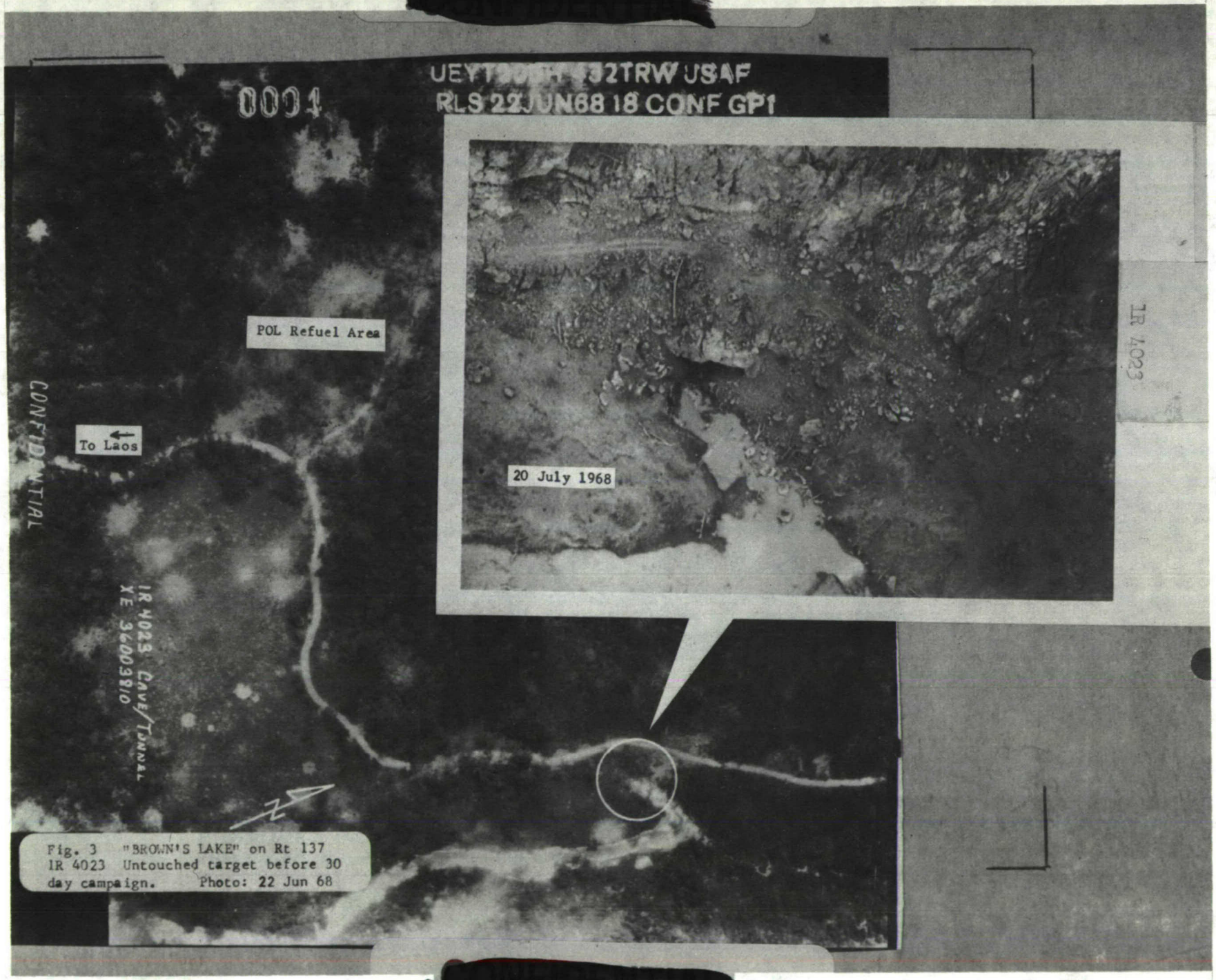


Fig. 3 "BROWN'S LAKE" on Rt 137
IR 4023 Untouched target before 30 day campaign. Photo: 22 Jun 68

[redacted]

[redacted]

TGT No. IR 04023 [redacted] BE No. [redacted]

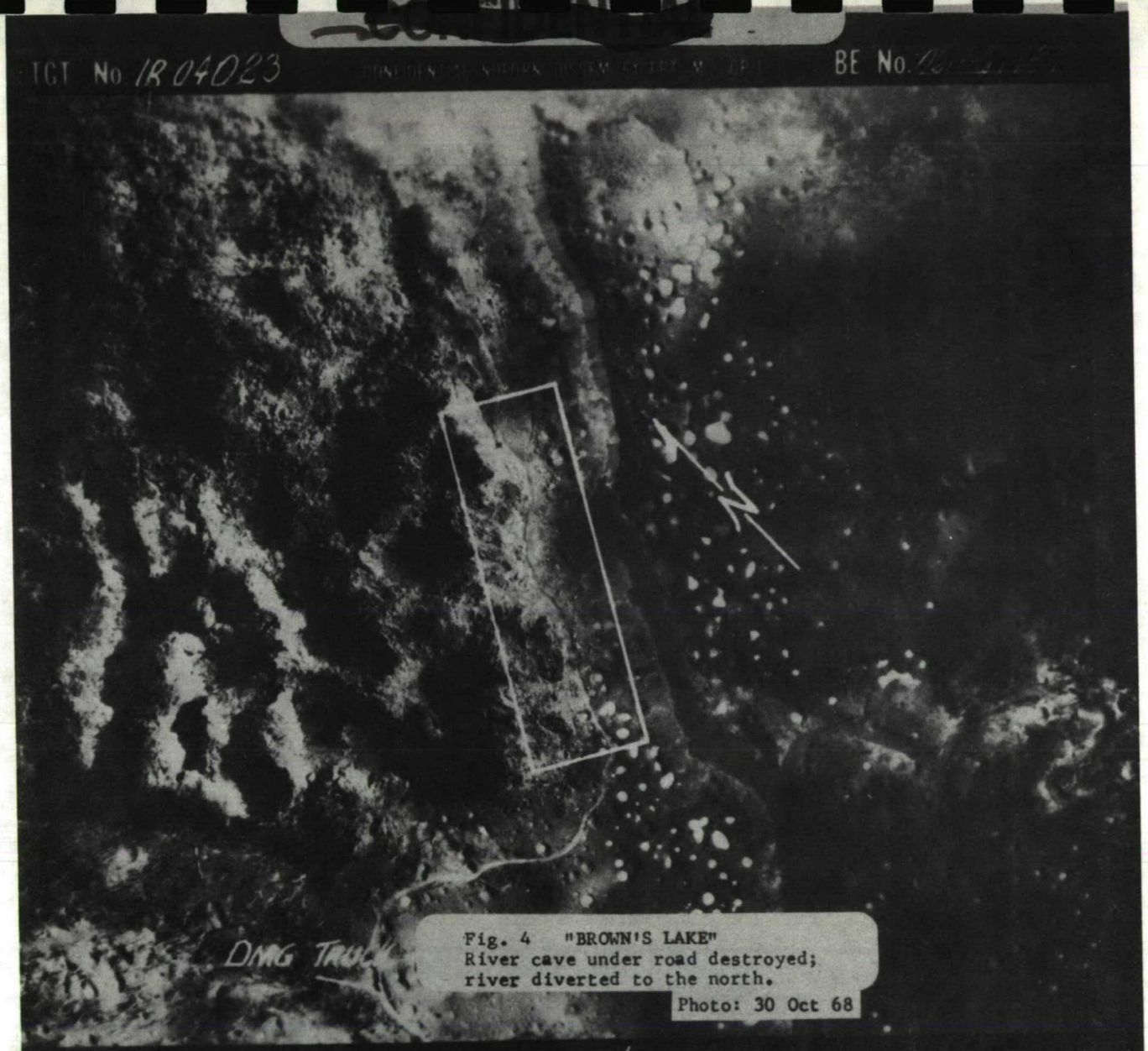


Fig. 4 "BROWN'S LAKE"
River cave under road destroyed;
river diverted to the north.
Photo: 30 Oct 68

1" = 250'

MSN No. UE 537X
MSN DATE 30 Oct 68
FRM No. 193 VT

[redacted] TIGER PHOTO SELECT [redacted]

CONFIDENTIAL NOFORN DISSEM EXCEPT M GP 1

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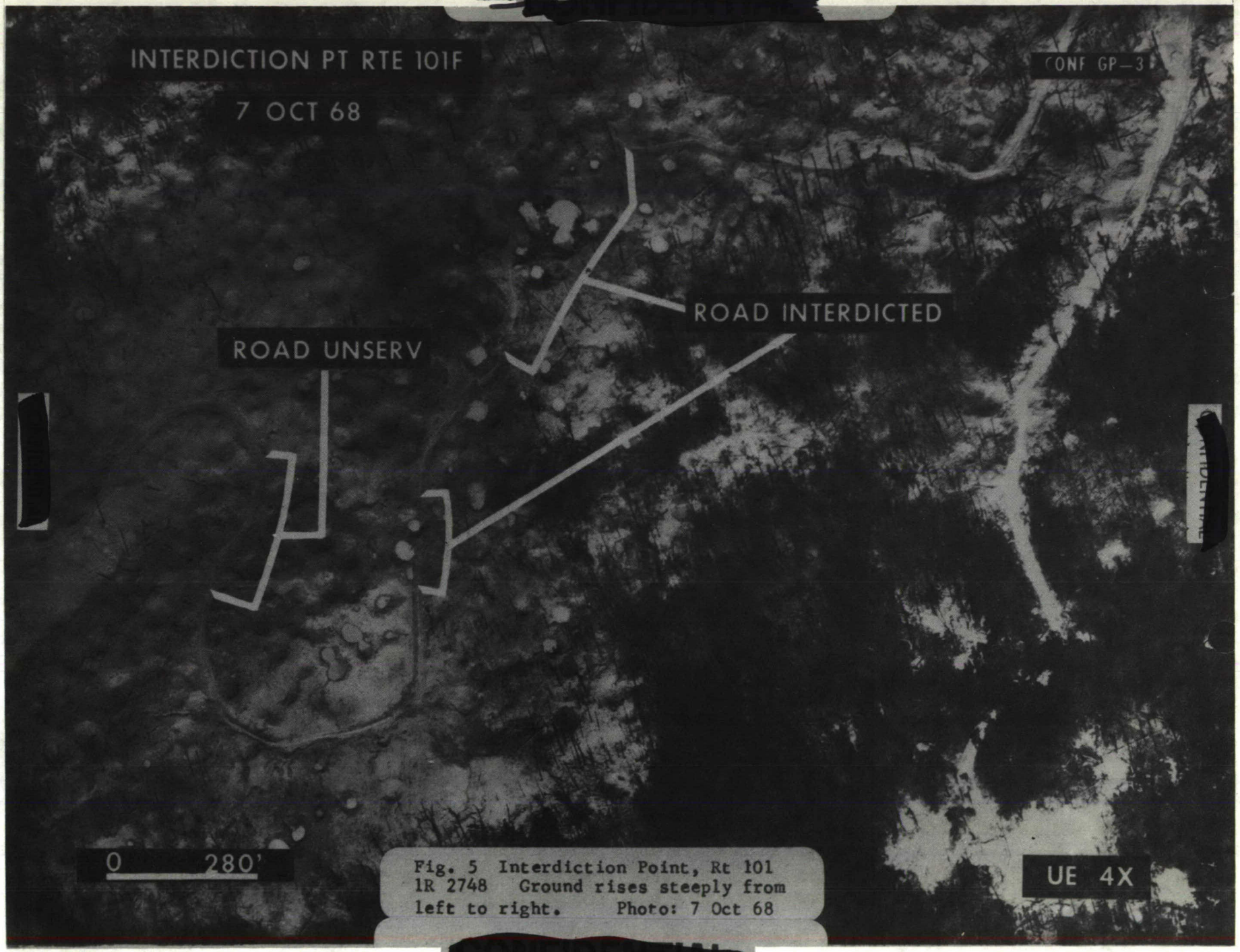


Fig. 5 Interdiction Point, Rt 101
1R 2748 Ground rises steeply from
left to right. Photo: 7 Oct 68

TGT No. IR 04693 [redacted] BE No. 0617-H0000

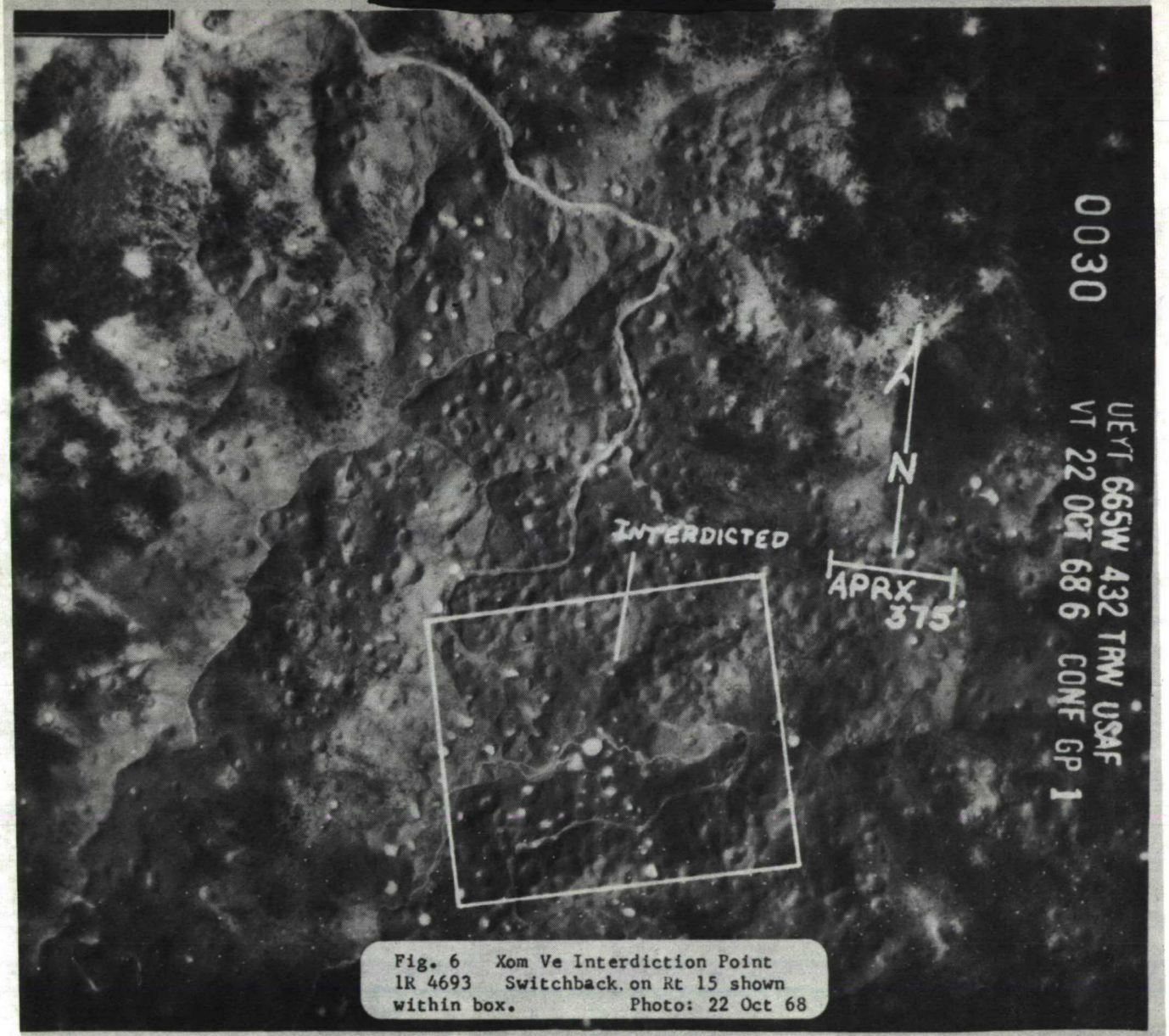


Fig. 6 Xom Ve Interdiction Point
IR 4693 Switchback on Rt 15 shown within box. Photo: 22 Oct 68

MSN No. UEYT 665W
MSN DATE 22 OCT 68
FRM No. VT 030

TIGER PHOTO BDA

COORDS 17 54 31 N 105 49 49 E
PRODUCED BY 14 TRS
DATE 22 OCT 68

[redacted]

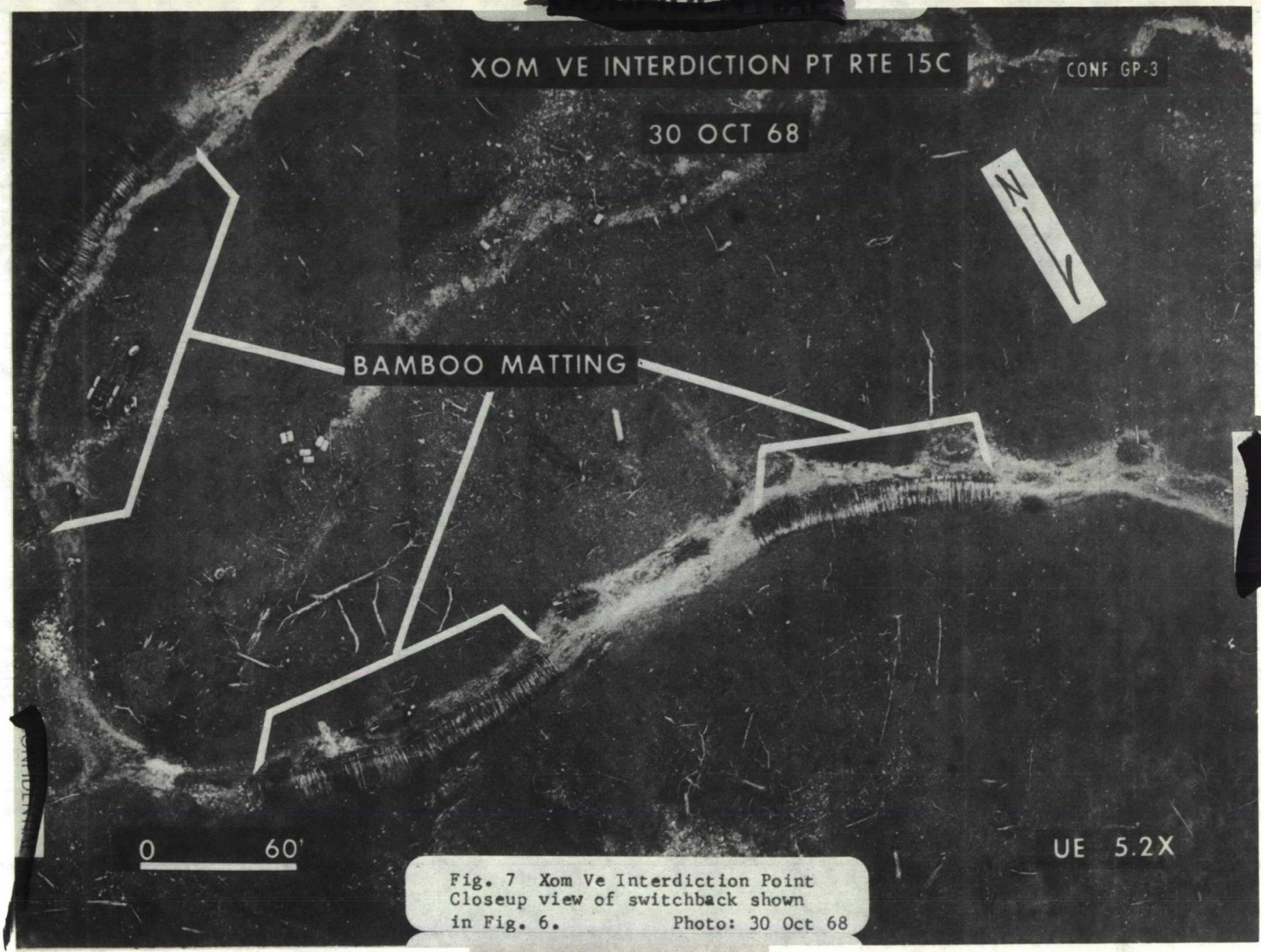


Fig. 7 Xom Ve Interdiction Point
Closeup view of switchback shown
in Fig. 6. Photo: 30 Oct 68

road running southeast along the ridgelines. Since the mountain ridges ran northwest/southeast in that region, Route 101 did not cut diagonally across ridgelines and valleys as did Routes 15 and 137, and it had few interdiction points. Figure 5 shows the point finally chosen, with the realization that it was the best available, but not an outstanding choke point. Of the three major points, Route 101 was closed the least--an estimated 23 percent of the time in the last two weeks of July 1968.[57/]

One notable feature of the intensive campaign was the active participation of the fighter Wings in searching out the best interdiction points. It was the 432d TRW that recommended the "Brown's Lake" point on Route 137. In another instance, the 37th Tactical Fighter Wing recommended the Xom Ca Trang ford complex composed of three TIGER targets six kilometers north of the Route 15/101 junction. In this particular case, 7AF operations personnel commented that experience had shown how difficult it was to close multiple crossings.[58/]

After the 30-day campaign had been in operation for awhile, several other points were added to the primary three, though the number was never large because of the sizable number of sorties needed for an effective closing of even one point. Eventually six points became the road interdiction program in RP-I. Route 1036 had also been included in the initial plans, but construction slowed by July and no choke point was established on that road.[59/]

The Phuong Chay Ferry Crossing was another interdiction point against which a significant effort was devoted. Both the 12th and 366th TFWs considered it one of the key interdiction points. Traffic coming down the heavily traveled

Route 101 had to cross the Song Troc in this vicinity to reach the important Route 137 junction/Delta 74 area, which allowed supplies to go either east to the coast or west to Laos. Just downstream from the landing was a large river cave in which the enemy kept the pontoon bridge mentioned earlier. This bridge was installed across the river early each evening and disassembled before dawn. Its existence was confirmed by photography when a night photo of 18 July showed the bridge, while a picture taken the next day showed nothing.[60/] Figure 9 shows Phuong Chay crossing after the November 1968 total bombing halt.

Cheap and long-term closure of a road was not obtainable in the 30-day campaign. Rather, large numbers of airstrikes had to be put on the interdiction points and the percentage of total RP-I sorties put on choke points actually increased as the campaign progressed. In the first 30 days, 12 percent of the RP-I strike force attacked the three major points.[61/] Later, in the extended interdiction campaign, the total for September was 27 percent against the six interdiction points.[62/] The effort against the choke points increased as it became apparent how quickly the enemy could reopen the roads. As an example of the magnitude of bombing, from 1-8 October, 113 sorties dropped more than 150 tons of bombs on Xom Ve, causing a reported 18 road cuts, one slide, 13 secondary explosions, and 11 secondary fires.[63/]

Under such a pounding, it was little wonder that choke points were out. After so many strikes, landslides would no longer cover the roads; rocks became pulverized, permitting easier road repair. This was noticed at the Route 15 and Route 101 points. Further, concentrating attacks on a selected few points had the disadvantage of allowing the enemy road crews time to devote to those

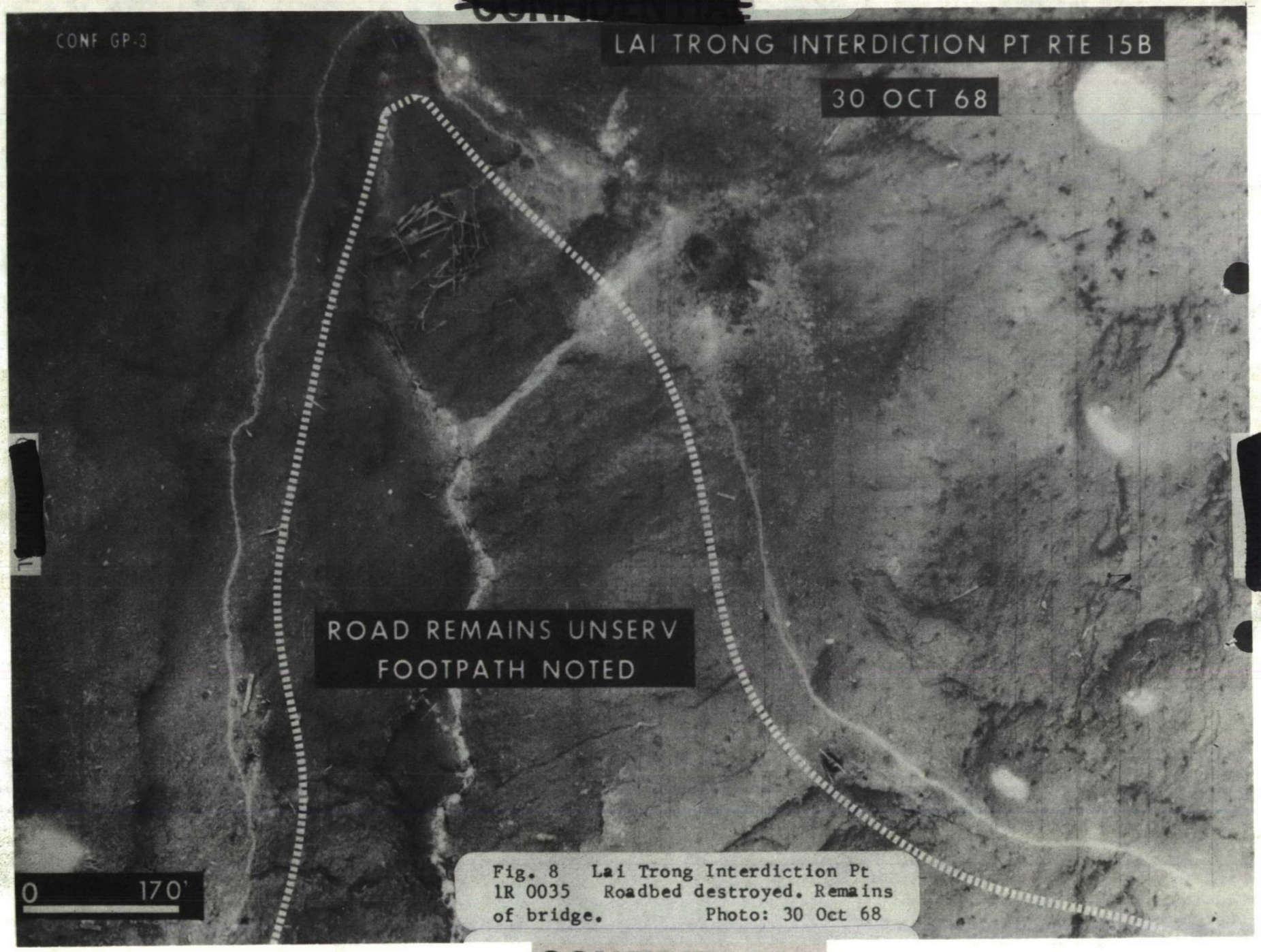


Fig. 8 Lai Trong Interdiction Pt
1R 0035 Roadbed destroyed. Remains
of bridge. Photo: 30 Oct 68

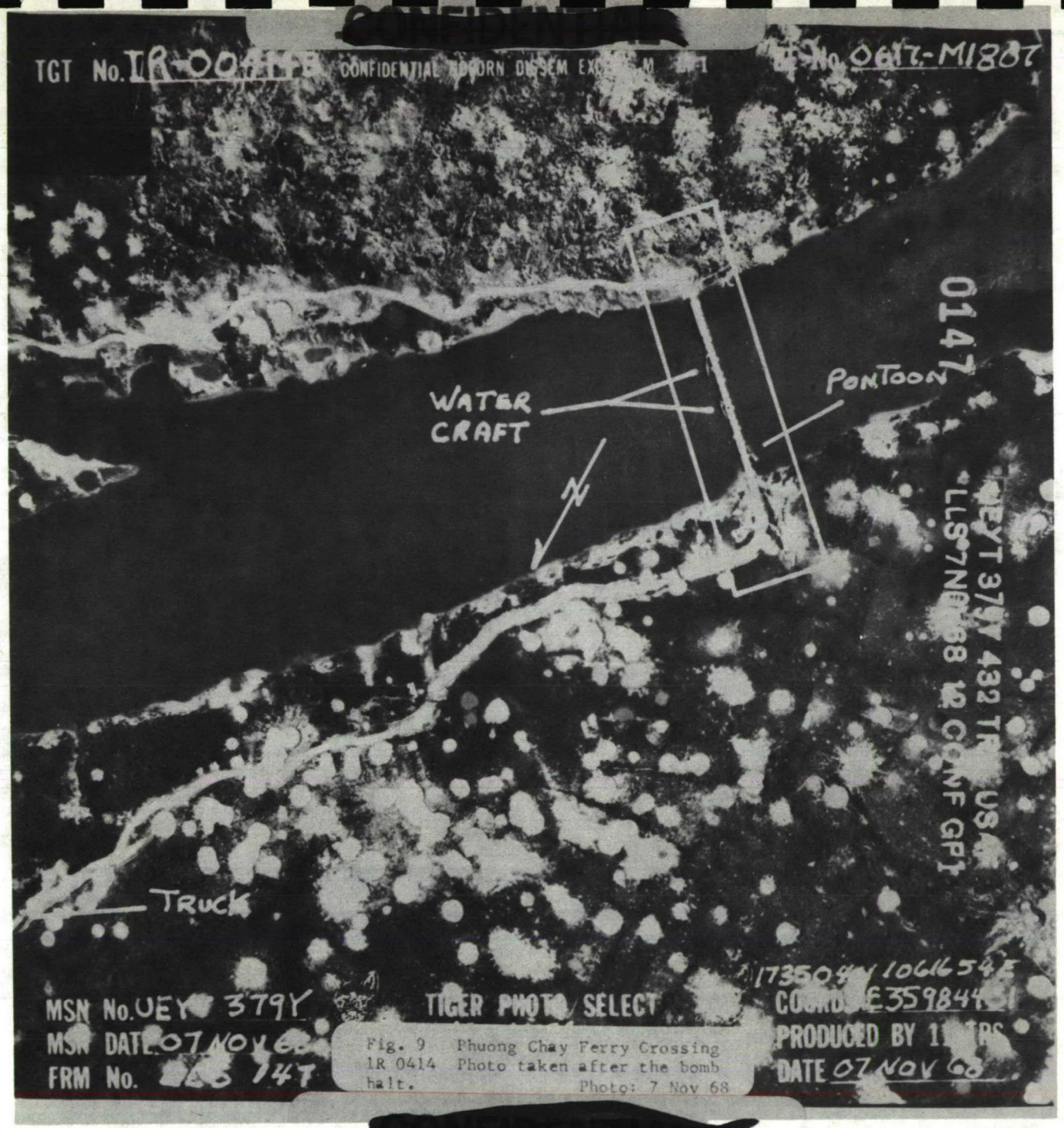


Fig. 9 Phuong Chay Ferry Crossing
1R 0414 Photo taken after the bomb halt.
Photo: 7 Nov 68

few targets, and to collect their repair equipment where needed. To counter such a stereotyped strike pattern, a proposal was made to shift interdiction points approximately every week. Another approach was to interdict one or two miles of road, so that repairs could not be made along the whole length before dawn and the beginning of another day's road cutting. Weakness in the latter concept existed because of the large amount of bombs required to cut even a concentrated interdiction point, much less a mile or two of road.

Tactical Air

These ideas had come from fighter Wings which participated at the invitation of 7AF in an evaluation of the first 30 days of the intensive campaign. The following answered the 7AF questionnaire:[64/]

8th TFW	Ubon	F-4
12th TFW	Cam Ranh Bay	F-4
37th TFW	Phu Cat	F-100 (Misty FACs)
355th TFW	Takhli	F-105
388th TFW	Korat	F-105

Basically, the Wings agreed with the concept of the 30-day plan for concentrating on a few interdiction points with a force adequate to close the points for significant lengths of time. They expressed varying degrees of dissatisfaction with the armed recon flown, though the suggested alternatives were several and not necessarily compatible. The 8th TFW called the 30-day plan "extremely worthy", while the 388th TFW thought it could be "greatly enhanced". The 37th TFW termed it "a major step in the right direction". The

37th TFW, based on its interpretation of cyclic resupply efforts, proposed just two interdiction areas near the RP-II boundary on the premise that the 30-day plan was "not stopping the flow of supplies", and therefore interdiction efforts had to be narrowed and intensified. Through the comments of the several Wings ran a viewpoint that considered the armed recon program of the earlier years largely nonproductive.

Several alternative tactics were proposed for closing a road. TALLY HO was considered too flat for good choke points and had a well-developed road network that allowed easy bypass. Northern RP-I was mountainous and funneled the enemy supplies down Routes 82 and 15. The 37th TFW proposed closing these with single points that might require allocation of some previous armed recon sorties to insure closure. Other Wings had other favored sites, as well as varying degrees of satisfaction with the 30-day campaign points. Several favored abandoning the heavily worked points such as 1R-2748 on Route 101 and 1R-4693 at Xom Ve, but there was disagreement over whether the points were "worn out". One proposal was to juggle the points and, by switching every week or so, avoid the problem of wear. This would keep the enemy repair crews on the move. Another proposal was to have several points a few miles apart to prevent enemy storage of repair supplies and equipment at single known interdiction points. This latter idea had the advantage, if two nearby cuts were made about one-half mile apart, of making the backpacking of supplies around the interdicted areas very difficult.

When examining various proposals to close a road, acknowledgment should be made that the circular error probable (CEP) for iron bombs in a flak

environment is poor. As an example (but possibly an extreme example), from 18 September to 4 October, the interdiction point 1R-2748 on Route 101 was struck by 26 day and 30 night sorties expending 208 bombs to claim 10 road cuts. During the same period, 14 successful photo recon sorties returned with photos for 10 different days. A 7AF message notified the fighter wings that "only one new bomb crater can be located in the target area during the entire 16-day time span investigated".[65/] Thus, a large number of sorties were required to keep a road even partially closed, and constituted the need for sizable assured sorties in RP-I before the 30-day plan could be practical.

The need for sizable forces to achieve effectiveness was also true of the MK-36 seeding operations. These 500-pound iron bombs had been modified with magnetic fuzes for use as water mines and sometimes as land mines. The Navy used them extensively. In the second quarter of 1968, it put 20,000 into North Vietnam;[66/] in July, the total Air Force/Navy seeding was 9,000.[67/] The effectiveness of MK-36s on land was uncertain. Evidence indicated they were effective in and along waterways and at landwater transshipment points. The enemy was soon employing countermeasures--a photo taken in North Vietnam showed two sampans trailing cables and POL barrels to sweep the river.[68/] A 7AF study of MK-36 operations from November 1967 to January 1968 listed some long-term effects at ferry crossings, but no immediate changes in truck traffic.[69/] Little concrete proof of effectiveness existed, due to the need for 24-hour surveillance, something rarely possible. Therefore, MACV directed an in-country test, which was run on Route 614, south of the A Shau Valley.[70/] Tropical Storm Bess washed out the test.[71/]

The Bullpup missile, AGM-12C, and the PAVEWAY laser bomb delivery system had accuracies of 50 and 40 feet, respectively. This was nearing a satisfactory accuracy. The 37th TFW praised the use of Bullpup on "Brown's Lake", where the AGM-12C undermined the roadbed. According to the Wing:

> *"...the use of AGM-12C's and AGM-62's against ferries and vital road bridges can be considered a success. These targets were often totally destroyed after one ordnance delivery pass. This is a milestone in efficiency and minimization of exposure time to achieve a goal. The AGM-12 and AGM-62 were the most effective weapons employed for both road interdiction and point targets."*

Matching ordnance to targets was a problem in the event a flight carrying iron bombs with delayed fuzing was to be diverted to a lucrative truck convoy; its ordnance would not be completely satisfactory, since fuze extenders or proximity fuzes were more effective, as were CBUs, napalm, and rockets. In a study made by 7AF, it was found that "less than 10% of all aircraft attacks resulted in an adequate amount and mix of ordnance being delivered on the target". Further, the proper ordnance achieved better BDAs "out of proportion to their number". However, 2.3 percent and 3.3 percent of the time, the actual fragged ordnance was considered a poor match against the primary and secondary targets, respectively.[72/]

The subject of correct fuzing, ordnance mix, and fragging for inboard and outboard stations is too technical for this report. However, the following is summarized from the 37th TFW discussion of what the Wing's FACs believed to be the most effective ordnance for various targets:

Trucks - CBU 24/29 and fuze extended bombs

SAMs - CBU 24/29 and fuze extended bombs

POL - CBUs and 20-mm

AAA - 3,000-pound air burst bombs

Supplies - CBUs and 20-mm

Rolling Stock - Bombs and AGM-12C

Sampans - Air burst bombs and 20-mm

Barges and Ferries - AGM-12C

Analysis by 7AF showed that for 1967 "mixed complementary ordnance doubled or tripled trucks destroyed or damaged per attack." Data from 1 July to 14 August, during the intensive interdiction campaign, revealed mixed munitions achieved 33 percent to more than 200 percent greater BDA. Stated another way, attacks of mixed complementary ordnance comprised 8 percent of the attacks on vehicles and resulted in 20 percent of the destroyed and damaged trucks.[73/]

Since bombing accuracy improved with target familiarity, the Wings reasoned that assigning interdiction areas to each Wing would improve accuracy. The 355th TFW proposed assigning either numbered routes or areas, so that target familiarity would increase and crews would acquire a feeling for enemy operations and thus recognize new patterns of enemy activity. The 388th TFW favored assigned road segments, because these would be familiar armed recon areas when the FACs had no good targets available. However, according to Maj. Gen. Gordon F. Blood, DCS/Operations, 7AF, dedicating squadrons to areas did not work well, because target flexibility had to be maintained. Should a

preplanned strike on a road be diverted, the original target might still have to be struck, and dedicated aircraft often were not available, or aircraft might be pulled out of their dedicated area to attack a SAM site. General Blood considered RP-I small enough to void the need for further geographical subdivisions.[74/]

The need for better area denial weapons was a frequent comment from the Wings evaluating the 30-day campaign. Once a road cut existed, enemy repair crews had to be kept from the interdicted point. With the munitions available, this usually was an impossible task without great numbers of sorties. Dropping antipersonnel weapons at random times throughout the night was one way. Iron bombs with fuze extenders were also used, as were CBU-24/29s, land mines, gravel (XM-47), and rockets. In bad weather, COMBAT SKYSPOT and COMMANDO NAIL were employed over the points. However, the 37th TFW considered a shortcoming of the 30-day plan, the fact that "no effort was made to harass or deter repair efforts by the use of instant and time delay antipersonnel weapons".

Before the November bombing halt, several new area denial weapons became available in limited quantities in SEA, but they were employed rarely or not at all in RP-I. These included the Wide Area Antipersonnel Mine (WAAPM) with its trigger threads, the BLU-72 PAVEPAT bomb, and CS-1 and CS-2. Some of the Wings recommended these be considered for use in North Vietnam. Effectiveness of area denial weapons was determined in large part by how long the typical choke points remained closed. In the opinion of several Wings, the enemy was not markedly deterred by the level of area denial done in the first 30 days. Perhaps because 1R-2748 on Route 101 was closed only one hour in four

best illustrates the need for improvement.

Since enemy trucks moved at night and hid during the day, truck kill tactics raised the choice of flying day or night armed recon. Armed recon had long been flown in North Vietnam and was the primary tactic used in RP-I prior to July. Many of the early catalogued targets were designated ART. Yet, when the 30-day campaign introduced the intensive choke point concept, armed recon began to seem less and less desirable. The 12th TFW said chasing trucks at night was "basically non-productive" and "less productive than we had originally presumed". The 37th TFW felt that "resources expended on the night armed reconnaissance program were ineffective in complementing the interdiction program by intercepting trucks prior to reaching dispersal points". Other Wings expressed a similar dissatisfaction toward the value of armed recon by emphasizing the need for other types of missions; such as, fragging night sorties primarily to harass road repair crews or having only strike sorties during daylight, except for two armed recon sorties at dusk and dawn. An analysis of the results of fragging large numbers of aircraft to achieve truck kills led the 432d TRW to conclude that "the results do not support this theory".

Night armed recon could not satisfactorily see targets or achieve daylight bombing accuracy. This obvious point will be better understood by citing the experience of the Misty FACs. By virtue of their four- and five-hour missions that included two or more aerial refuelings, the FACs were the experts at seeing trucks and truck parks in RP-I. They realized how little a strike pilot could see even in daylight:

"Strike fighter pilots are unable to see and/or identify targets during armed reconnaissance. Commando Sabre (F-100F) resources are drawn from the ranks of highly experienced strike pilots; however, historically, twenty missions are required to train a MISTY pilot. He generally can be considered highly qualified only after approximately 40 missions. It is unreasonable to expect strike pilots with limited fuel for road recce and no training to acquire visually small and camouflaged targets that may be revealed only indirectly. Strike pilots with wide experience over Vietnam have flown orientation missions with MISTY and subsequently realized they did not know what small targets such as trucks looked like. One pilot with over 30 sorties over Route Package One as a flight lead stated after a MISTY orientation mission that he saw a gun site and a truck for the first time, although he had 'struck' both types of targets many times."

One 7AF report showed that in RP-I during June and July 1968 only 20 percent of the total trucks sighted were seen during daylight hours, but 60 percent of the total trucks destroyed or damaged came from that 20 percent. Conversely, only 40 percent of the total truck kills occurred at night despite 80 percent of the total trucks being spotted then.[75/]

FACs accounted for a portion of this disparity since FACs were credited with improving daylight strike effectiveness about 30 percent. Statistics were collected for July 1968 that showed FACs assisted 83 percent of the day strikes, but only 26 percent of the night strikes. Since only five or six F-100 Misty FAC sorties were available each 24 hours, with only one night FAC (early evening) scheduled, uniform coverage could not be achieved. From these and other data came the conclusion that "the kill rates for high performance aircraft with high performance FAC assistance at night are equal to those during the day and 40% higher than without FAC assistance".[76/] During the 30 days of the campaign, 52 percent of the sighted trucks moved between 2000 hours and

2400 hours, but armed recon had to be fragged rather uniformly throughout the 24 hours to match more closely the availability of the FACs.[77]

Despite the limitations, night strike/armed recon had to be flown to harass repair crews and truck traffic. The 8th TFW favored no night diverts, unless there was a FAC to direct the strikes at the divert target. Among the most effective ordnance against trucks were area weapons such as CBUs, rockets, napalm, or iron bombs with fuze extenders. Flares, according to the 8th TFW, quite often caused a loss of visual acquisition of the trucks by alerting the drivers to turn off their lights. Often the trucks just drove out of the flare light and the pilots lost them.

Seventh Air Force made two innovations during the 30-day extended campaign in recognition of the target visibility problem. Since the F-4s and F-105s flew above small arms fire, the pilots could not see trucks in the trees or along the roadsides. First, armed recon sorties were fragged with a preplanned target to hit, if their 18 minutes of looking for "movers" proved unproductive.[78] Second, to achieve a better night armed recon capability, certain squadrons were designated for night missions only. This seemed to work well, if the pilots first received some daylight orientation.

After the April bombing halt, there were fears that the enemy would move some of his air defenses from his new sanctuary and place them in the panhandle. This did not happen. Five to seven SAM battalions with some 100-mm guns did attempt to infiltrate RP-I, but 7AF tactics made their destruction a number one priority and continued fragging airstrikes until the SAM or gun was destroyed.[79]

Sixteen aircraft were fragged every day to hunt SAMs and, if nothing were found, they struck known prepared positions. Also, Navy counterair strikes kept MIGs above 18° 30'.[80]

The interdiction points were of course defended, especially as sustained Air Force operations continued on several points. A study of six RP-I points (including the three major ones), plus Ban Laboy Ford in Laos, revealed that from 14 July to 11 September there were 974 reactions in 3,377 sorties with 14 hits and one aircraft shot down. Throughout the entire campaign, 34 aircraft were lost in RP-I.[81]

Target Acquisition

Several intelligence systems operated in RP-I to generate targets and monitor enemy reactions. Those systems ranged from routine photo efforts for ARC LIGHT targets to realtime intelligence on "movers" spotted by Army SLAR for relay to F-4s. Besides SLAR, realtime and near realtime intelligence came from the Misty FACs and IGLOO WHITE. The previously cited statistics on the impact of FAC operations on strike effectiveness, and the enthusiastic comments by the several fighter Wings left no doubt that FACs significantly improved the 30-day campaign. However, in late August the FAC flying hours per mission were shortened due to the nonpermissiveness of RP-I, and the program was somewhat curtailed.[82]

IGLOO WHITE was put into RP-I on a trial basis with mixed results. In June and July, there were normally 14 strings with an average total of 75 sensors operating with an average lifetime of 15 days. The 553d Reconnaissance Wing, Korat AB, Thailand, began flying the EC-121 Pink Orbit on 1 June. Pink

Orbit, named for a color like the other three IGLOO WHITE orbits, monitored the sensors, identified targets, and passed recommendations to the Airborne Battlefield Command and Control Center (ABCCC). The sensor fields were divided approximately in half, between Moonbeam ABCCC in TALLY HO and ALLEY CAT ABCCC in RP-I. From 1 June to 1 August 1968, 145 EC-121 sorties were flown and 1,310 targets were reported to the ABCCC. Pink Orbit differed from Task Force Alpha in Laos in that Pink Orbit did not relay reports to a ground station. Rather, the reports were processed in the EC-121 and passed directly to the ABCCC. The two aircraft also had secure voice communications.[83/]

During June and July, a monthly average of 1,392 target sequences were identified by IGLOO WHITE in RP-I and 21 passed daily to ABCCC.[84/] Compared to Laos, RP-I had less concealing undergrowth and jungle, more rice paddies, and fewer FACs to investigate sensor reports. And the Misty FACs were jets rather than the slower, more thorough, O-2 FACs. Examples of the use of sensors were the five monitoring sensors on Route 137 near the Laotian border and the four across the border on Route 912. From 26-30 August 1968, a possible 26 movers were identified and ten confirmed by visual reconnaissance. The low number of trucks tended to confirm the estimate that "Brown's Lake" was closed on 26, 28, and 29 August 1968.[85/]

While IGLOO WHITE was capable of providing near realtime reports of truck convoys and did provide all-weather Road Watch capability, it also had potential for locating truck parks. Several of the Wings envisioned an integrated FAC/SLAR/sensor pool of realtime information on lucrative truck parks. The 8th TFW said:[86/]

"Spud (OV-1 SLAR) and IGLOO WHITE sensor information should be made available to FAC's prior to their departure each morning. Realtime information as to where the trucks have stopped prior to sunrise is available from both Spud aircraft and IGLOO WHITE sensors but does not seem to be available to the FAC's on a timely basis."

The 13th and 388th TFWs favored attacking truck parks in the daytime, rather than flying night armed reconnaissance. The latter Wing also suggested infrared in the hour before dawn to locate many truck parks. The 432d TRW strongly endorsed the idea of fragging the main strike effort during the day and using most of the night strikes to harass the choke points to keep them closed.[87/] This concept looked upon interdiction as cutting and closing the road, and then attacking the trucks and supplies which were backed up. If SLAR, infrared, and IGLOO WHITE reports could be given to the FACs in the morning, target acquisition would be enhanced.

Developing FACs within the fighter Wings, located, for example, at Da Nang and Ubon, and making available to the FACs, ABCCC, and fighter pilots, the real-time and near realtime intelligence of SLAR/infrared/IGLOO WHITE were potential steps toward an improved recon/strike force. By chance, another facet of this concept was developed at Udorn, where the 432d TRW had only two reconnaissance squadrons and thus had room for two F-4 squadrons. Photo squadrons and strike pilots placed together at Udorn were catalysts allowing pilots to become "photo interpreters" and reconnaissance technicians to hear first hand BDAs. The Wing Commander, Col. Victor N. Cabas, used the phrase "dynamic success of the intelligence function" in appraising the Wing's participation in the 30-day campaign. Further, he said:[88/]

"Having two RF-4C Reconnaissance and two F-4D Fighter Squadrons in one Wing proved unpredictably and astoundingly successful. The different missions of each in reality were complementary, the total result stimulating spontaneous improvements in the performance of each. Concentrated participation in the interdiction program magnified the potential benefits as supervisors, intelligence staff, fighter and reconnaissance crews were melded together as a team with common and clearly perceived objectives."

Timely dissemination of target photos and mosaics to fighter Wings was a persistent problem in SEA for the Air Force, and having a photo reconnaissance capability in the same unit with fighter squadrons was a potential solution. The 432d TRW viewed it as such. However, the Directorate of Intelligence, 7AF, had a different opinion:[89/]

"Locating photo recce capability in the same unit with fighter squadrons appeared to solve one of the most persistent Air Force intelligence problems in SEA; i.e., units claiming distribution of target materials was too slow. This was a valid problem when target appearances were changed by events, but was exaggerated by an unrealistic demand by air crews for photography with a more current date even if it showed the target status and appearance unchanged. The collocation of recce and strike units led to the local solution of the photo currency problem, but it was accomplished at the expense of 7AF Headquarters' directed target material programs. Local priorities and projects interfered with support of 7AF efforts to satisfy the target material and mosaic needs of all strike/FAC units. The problems of photo support were eventually satisfied by full 432 TRW participation in the TIGER Photo and Whole Mission Sonne programs initiated by 7AF to eliminate the stated problem."

The 30-day campaign emphasized again the need to get photo results quickly from the recon bases to the fighter Wings. For this, the T-39 courier service was established. However, one study showed that it still took more than 30 hours to process, exploit, and deliver photos to the Wings.[90/] For the

COMMANDO HUNT campaign of late 1968 in Laos, the U-10 was planned to add further courier routes. However, the courier flights could never eliminate travel delay, nor satisfy, as could a photo capability within the fighter Wing. Of course, parceling out recon squadrons to fighter Wings raised some initial and long-range problems that might override the advantages of joint deployments. The recon squadrons in SEA were not intended for self-sufficiency. Decentralization would probably degrade some sophisticated technical capabilities requiring special equipment or rare skills. However, the effective results of the 432d TRW in interdiction suggested real merit in further appraisals of the recon/strike Wing.

Evaluation

Evaluation of the intensive campaign varied within 7AF from high praise to very guarded optimism. At a 9 September conference at Udorn, Thailand, General Keegan (See Appendix II) cited one of his reasons for believing the campaign successful:[91/]

> *"The traffic has now gone through three cyclical moon cycles and phases and the curve has been essentially flat. So this is unprecedented and it indicates or suggests to us strongly that the interdiction campaign is what has forced the traffic (down) and held it down."*

By December, General Keegan saw much more evidence of the superiority of the choke point concept over that of "chasing four-wheeled cows".[92/]

> *"The results (of the intensive campaign) achieved either for this war or any previous war were unprecedented. A 90 percent reduction of the enemy's net logistic tonnage through-put into Laos was accomplished*

The enemy's tonnage was reduced from an approximate 340 tons per day in July to less than 35 tons per day in September. By October, this tonnage was effectively reduced to what men could carry into Laos on their backs. Overall, enemy traffic flow along infiltration routes was reduced by 97 percent - from 1,289 sightings in the period 10 to 23 July to fewer than 43 sightings between 16 and 30 October - the latter being confined almost exclusively to shuttling in support of road construction efforts between interdiction points."

Brig. Gen. Robert J. Holbury, Director of Combat Operations, 7AF, also considered the campaign highly successful:[93/]

"The 7AF Interdiction Program has been judged a success at the highest military levels. A significant decrease in truck traffic into Laos has been confirmed. The intelligence community has reported severe enemy shortages of both equipment and food in I and II Corps. General Abrams has attributed these shortages and the current lull in enemy activity in large measure to the success of the 7AF Interdiction Program."

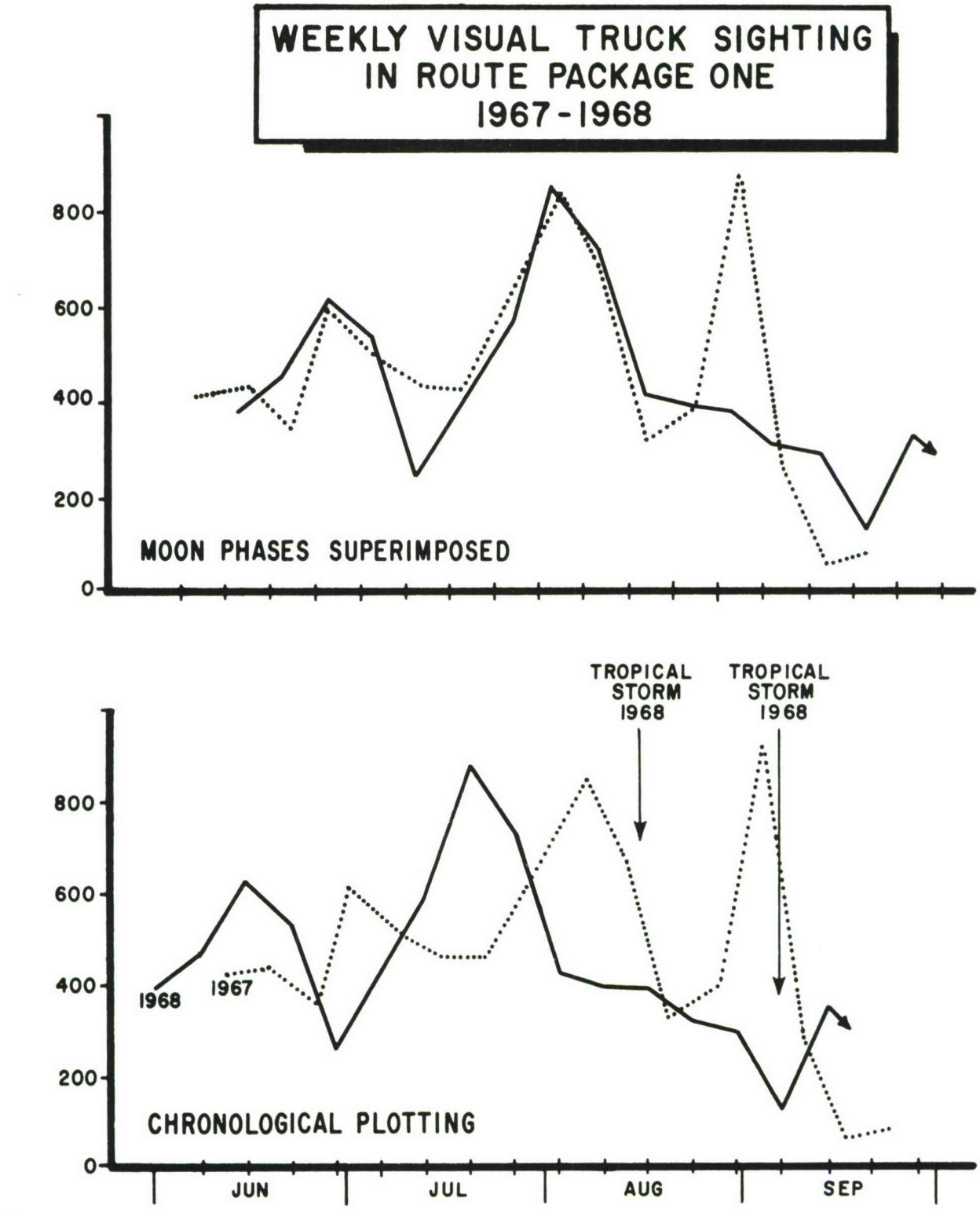
Two 7AF sections prepared studies on the intensive campaign. The Office of Operations Analysis (COA), under Dr. Robert N. Schwartz, published "Route Package I Interdiction Effectiveness". Most of the cited statistics in the study referred to June and July 1968, and thus portrayed the RP-I operations as they were prior to the intensive campaign. However, the breakdown of sorties by types of targets and TOTs, and their relationship to enemy activities were particularly useful. The Directorate of Tactical Analysis (DOA) prepared a study for General Holbury entitled "Evaluation of 30-Day Intensified Interdiction Effort in RP-I and TALLY HO". These two studies will be referred to as the COA and DOA studies.[94/]

Confining itself to the first 30 days, the DOA study noted a "moderate rate of closure of selected routes". The destroyed/damaged (D/D) rate per

attack sortie increased because, while truck D/D remained constant, the watercraft D/D rate increased 100 percent. According to this study, "By the third and fourth weeks of the campaign, watercraft damaged or destroyed constituted 58% of mover BDA as compared to an average of 11% for the preceding 16 weeks." The 12 percent of attack forces against just three interdiction points was large, but "not exorbitant considering that from 20 to 40 percent of attack sorties on any one day are flown by COMBAT SKYSPOT with indeterminate results". Yet, the DOA paper was not oriented toward the choke point concept. Sizable portions of the text discussed the need for a better match of armed recon against night truck movements and addressed how much higher the mover BDAs were with mixed complementary ordnance. The general impression from the DOA study was that the first 30 days of the intensified interdiction campaign were promising, but provided no dramatic breakthrough in interdiction tactics. This view seems substantially correct. The reports of long-time closures of choke points and of severe drops in truck traffic were made for late August through October 1968.

Even more so than the DOA study, that of COA was cautious in attributing shifts in traffic patterns solely to the interdiction campaign, especially since two tropical storms brought heavy rains to RP-I and presumably curtailed enemy movement. The following analyzes the first 30 days: 95/

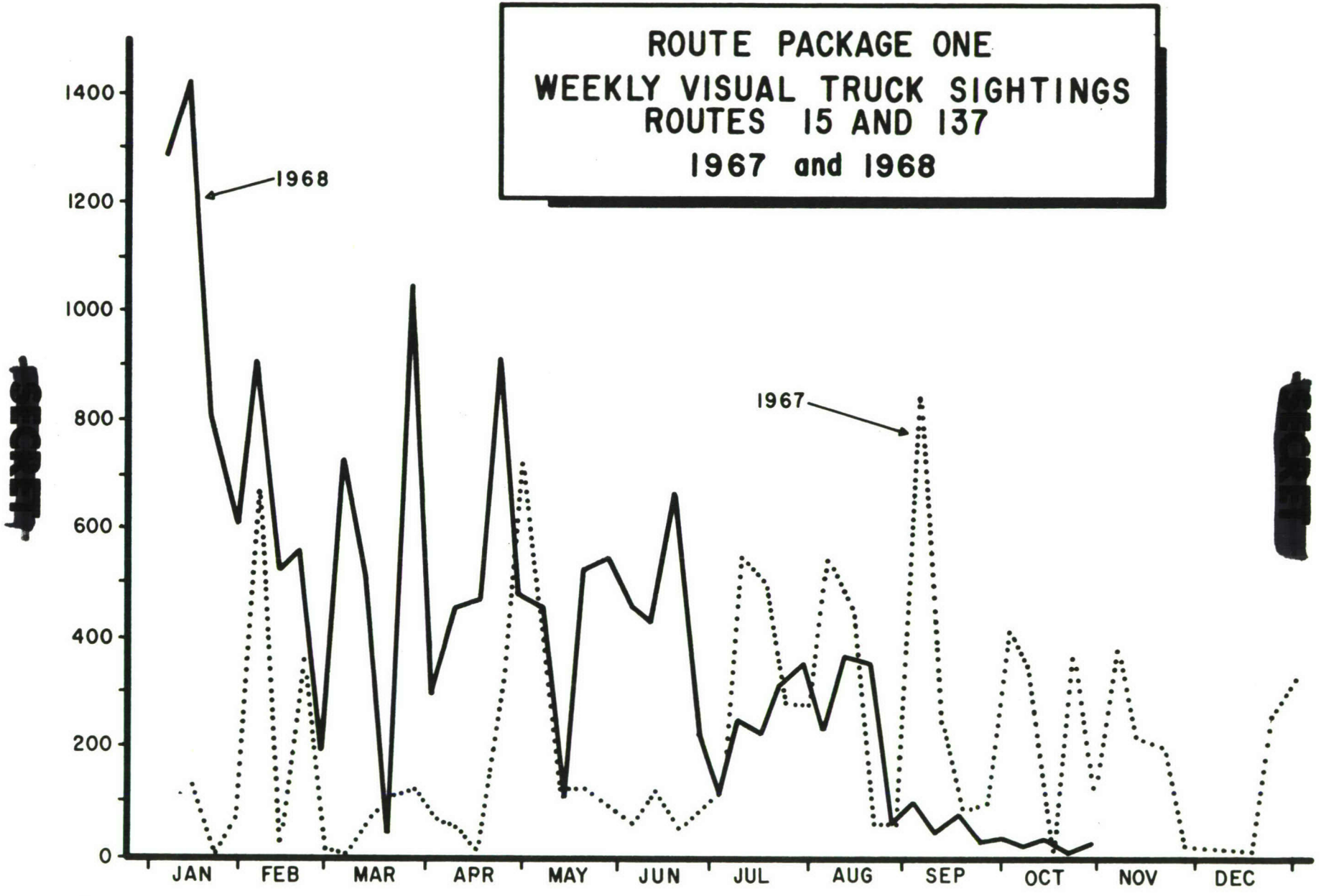
> *"In summary then it may be said that the interdiction program appeared to affect enemy logistic activity in and through RP I and into Laos. In its initial stages it apparently forced him to shift a portion of his logistical activities from truck to waterborne carriers. As the program continued and in conjunction with the presence of two tropical storms, the cyclic nature of his observed activity was significantly affected.*



(ILLUSTRATES CYCLIC NATURE OF TRAFFIC IN RP-1 CLOSELY RELATED TO PHASES OF THE MOON.)

SOURCE: COA, 7AF (* 68-12)

FIGURE 10



SOURCE: 7AF WAIS

FIGURE 11

Similarly, his mode of operation in terms of introducing supplies into Laos appeared to be upset and ultimately by the middle of September the level of supply input to the Laotian route structure appears to have been reduced to below the levels observed in June. More positive statements as to the exact degree to which logistic flow was reduced are impossible to make without more accurate information as to the enemy intentions and more accurate and complete data as to the exact character and magnitude of his logistic operations."

Among the objectives of the 30-day campaign were two that should be measurable. First, the truck traffic pattern would decline or shift from the mountains to the coast, if the choke points were closed. Second, truck kill totals per strike would increase as traffic collected behind the road cuts or moved onto the open coastal plains. Only the first is clearly evident in the weekly statistics.

Figure 10 shows the visually observed traffic in RP-I for June through September 1967 and 1968.[96/] The top graph superimposes the two years' activity to reveal the absence in 1968 of the third peak. However, just where this peak should be, Tropical Storm Rose appeared, coming ashore on 13 August near Hanoi, bringing rains and floods to RP-I.[97/]

Weather conditions in RP-I require a few comments. French weather records over a 34-year period show that the rainy season comes to RP-I in September and lasts through November. Fifty-one inches of the 80 annual inches of rain fall in those three months.[98/] Yet, Figure 11 shows that travel on Routes 15 and 137 continued heavy in 1967 during the wet months, revealing the all-weather capability of the mountain roads. It is doubtful whether the heavy rains of mid-August had any more than a short-term impact. Furthermore, it

is possible that without the interdiction effort, the tropical storms would hardly have affected truck traffic. Heavy bombing of choke points turned rock into stony dirt that the rains turned to mud, making potential mudholes and washouts.[99/]

Comparisons may be made between effectiveness during 1967 and 1968, since the magnitude of truck sightings in these years for June and July was about the same. Therefore, ten-week periods were chosen before and after mid-July to make some simple comparisons. The periods were:

1967 Before	4 May - 12 July 1967
1967 After	20 July - 27 September 1967
1968 Before	2 May - 10 July 1968
1968 After	18 July - 25 September 1968

Total truck sightings in all RP-I, as reported in the 7AF WAIS rose between the before and after 1967 periods from 5,458 to 7,088, but fell in 1968 from 6,444 to 5,084. This substantiates Figure 10, which shows traffic after 14 July 1968 dropping significantly below the previous year.

If Route 15/137 total truck sightings for the 1968 before and after periods are separated from the rest of RP-I, the following results appear:

	Sightings Rt 15/137	Sightings Remainder of RP-I	Total RP-I Sightings
1968 Before	3,816	2,628	6,444
1968 After	1,937	3,147	5,084
Change	- 1,879	+ 519	- 1,360
Percentage Change	- 50%	+ 20%	- 21%

Just as the plan predicted, traffic dropped on the mountain roads and rose elsewhere. Comparing ten-week periods before and after the interdiction-campaign began in 1968, truck sightings dropped 50 percent on Route 15/137 and rose 20 percent in the rest of RP-I. Total RP-I truck sightings dropped 21 percent.

Seventh Air Force analysis in the DOA study showed that watercraft sightings rose from 39 per day during 1-19 July to 77 per day in 20 July-14 August and further:[100/]

> *"By the third and fourth weeks of the campaign, watercraft damaged or destroyed constituted 58% of mover BDA as compared to an average of 11% for the preceding 16 weeks."*

Once traffic was blocked in the mountains and deflected toward the coast, the concept behind the intensive campaign foresaw either an increase in total "movers" D/D, or an increase in the D/D rate per attack. The following occurred in the four ten-week periods:

	Trucks D/D		Watercraft D/D	
	1967	1968	1967	1968
Before	934	1,114	N/A	376
After	1,407	662	N/A	954
Change	+ 473	- 452		+ 578
Percentage Change	+ 51%	- 41%		+ 154%

Total RP-I truck sightings fell 21 percent, but D/D fell 41 percent. Watercraft D/D rose 154 percent. During the 30 days at the beginning of the campaign, the truck D/D rate per attack sortie flown remained constant, but the watercraft D/D rose 100 percent. According to the DOA study just cited, "This

is definite evidence of an increase in the efficiency of attack force employment."[101/]

According to DOA estimates, attacking watercraft destroyed an estimated 6.6 tons per strike in RP-I versus .9 tons per strike against a truck. These statistics were of course estimates based on sometimes dubious assumptions, but they seem to indicate that watercraft were more lucrative targets than trucks. Potentially, sampans, barges, and coasters hauled far more tonnage per trip and had fewer places to hide from airstrikes.

Yet, according to the Misty FAC Commander, the Misty FACs had little evidence that the watercraft were carrying large tonnage. Heavy use of road approaches to ferry crossings indicated significant tonnage was moving by water, but this may have been a shuttle across water barriers, rather than a major enemy tactical shift away from a failing trucking system and toward a coastal waterborne logistic network. The Misty Commander received no evidence that the surge in watercraft sightings was of military significance. He felt that if this had been substantiated, a "devastating attack" could have been launched. As it was, the FACs were reluctant to attack watercraft that gave the outward appearance of fishing.[102/]

Out of the varying opinions and rough statistics emerges a picture of the intensive interdiction campaign from mid-July through October 1968 as markedly successful. Due to the April bombing halt, massive tac air was available to concentrate on closing choke points. In the first 30 days, the three major points were closed an estimated 23 percent, 30 percent, and 60

percent of the time. In the following months, a higher percentage of tac air was devoted to the interdiction points, which were closed most of the time by bombs and rain. According to the estimate of 7AF Intelligence, Route 15 was completely closed to through traffic from 16 September to the November 1968 bombing halt; Route 137 was closed an estimated 85-90 percent of the time in October.[103/]

True, 5,763 trucks were sighted in RP-I from 18 July to 30 October and only 783 were estimated damaged or destroyed. But if Routes 15 and 137 were closed as tightly as estimated, then the enemy had no way to truck heavy supplies from RP-I into South Vietnam, and the goal of interdiction was much more nearly achieved in the intensive campaign than at any other time in the war.

But what were the reasons for success? In the opinion of Lt. Col. Walter J. Bacon, Commander of the Misty FACs from mid-June to mid-October, there was an over-emphasis on bombing choke points, and not enough on attacking lucrative truck and storage targets. Thus, a large amount of munitions was wasted, rather than used with discrimination and flexibility. He further thought that the enemy could open or bypass any choke point he chose. Thus, at Xom Ve on Route 15, the enemy was backpacking supplies around the cut via trails and an old railroad bed.

Even the large success at the "Brown's Lake" point may not have been attributable solely to bombing that isolated point. Enemy supplies had to pass south through the Phuong Chay Ferry complex before reaching "Brown's Lake". Constant pressure on Phuong Chay was part of the initial interdiction campaign.

Colonel Bacon thought the harassment of the ferry complex was "heavy but not so well planned". Yet, this pressure may have reduced for the enemy the value of trying to keep the "Brown's Lake" point open.

Colonel Bacon also felt that the heavy rains of August hurt the enemy, especially at choke points, where the loose rubble became a morass. Thus, in the view of this officer, who was intimately acquainted with implementation of the RP-I campaign, the program was successful, but not solely because it concentrated on closing choke points. In his opinion, it was too far removed from the truck kill concept. Clearly, the debate on interdiction tactics still continued within 7AF.[104/]

The prospects for duplicating the success of RP-I tactics in the follow-on Laotian dry season campaign were sobering. The good tactician capitalizes on the advantages of weather and terrain, and in RP-I those were favorable for a choke point concept. The enemy had few bypasses on the mountain roads and he had to use either Routes 15 or 137 to drive to Laos. Bombing choke points also capitalized on the heavy rains of August and September to wash out the weakened roadbeds. Laos, from December through April, did not have appreciable rain. Further, there were very few non-bypassable points in Laos, and the November bombing halt placed the RP-I choke points off limits. Maintaining choke points during COMMANDO HUNT in Laos would have to rely mostly on area denial weapons and, since suitable munitions were scarcely available, area denial would have to be maintained by even heavier bombing than was done in RP-I. The tac air and B-52 bomb tonnage necessary to keep key points on Laotian roads closed most of the time will be very large.

FOOTNOTES

1. (TS/AFEO) Interview, Brig Gen George J. Keegan, Jr., DCS/Intelligence, 7AF, 2 Dec 68;
(S) Interview, Maj Gen Gordon F. Blood, DCS/Operations, 7AF, 27 Nov 68.

2. (S/NF) WAIS, DIP, 7AF, "7AF Summer Interdiction Program", 7 Dec 68, pp 12-13. (Hereafter cited: WAIS, 7 Dec 68.)

3. (TS/AFEO) Interview, Brig Gen George J. Keegan, Jr., DCS/Intelligence, 7AF, 2 Dec 68.

4. (S) COA 68/5 Rprt, Ronald P. Black, COA, 7AF, "Air Interdiction in Mud River", 16 May 68, pp 24, 26, 7, 29, respectively.

5. (C) Appendix I.

6. (S) Interview, Maj Gen Gordon F. Blood, DCS/Operations, 7AF, 27 Nov 68.

7. (S) Memo for General Dunham, Lt Gen William W. Momyer, Comdr, 7AF, 11 Mar 67.

8. (TS) Form 4, Lt Col Howard F. Lorenz, Chief, Combat Plans Div, 7AF, "Concise Treatment of the SW Monsoon Plan (COBRA)", 30 Jun 67.

9. (TS) Ibid.

10. (TS) Ibid.

11. (TS) Form 4, Lt Col Howard F. Lorenz, Chief, Combat Plans Div, 7AF, "Operation COBRA Plan for SW Monsoon Season", 17 Jul 67.

12. (S/AFEO) Msg, CINCPACAF to 7AF (General Ryan to General Momyer), (Operation COBRA), 24 Apr 67.

13. (TS/NF) OPlan 530-68, 7AF, 1 May 67, pg B-3.

14. (TS/NF) Ibid, pg B-I-3.

15. (TS/NF) Ibid.

16. (S) Ltr, Col William Stewart, Chief, DOCC to DOC, subj: General Blood's "End of Tour Report", 16 Oct 68;
(S/AFEO) Rprt, Lt Col Thomas Wade, DOAC, 7AF, "7AF Tactical Air Control Center Operations", 15 Oct 68, pg 40.

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18. (TS/NF) Ltr, CINCPACFLT to CINCPAC, subj: Interdiction Operations, 20 May 68.

19. (S) Briefing, DITO, 7AF, "U.S. Navy Interdiction Program, North Vietnam", 8 Aug 68.

20. (TS/NF) Ltr, CINCPACFLT to CINCPAC, subj: Interdiction Operations, 20 May 68.

21. (TS/NF) Ibid;
(S) Briefing, DITO, 7AF, "U.S. Navy Interdiction Program, North Vietnam", 8 Aug 68.

22. (TS/NF) Ibid.

23. (TS/AFEO) Interview, Brig Gen George J. Keegan, Jr., DCS/Intelligence, 7AF, 2 Dec 68;
(S/NF) WAIS, 7 Dec 68, pg 2.

24. (S/NF) WAIS, 7 Dec 68.

25. (TS/NF) Transcript, Capt Edward Vallentiny, DOAC, 7AF, Udorn Meeting, 9 Sep 68, undated, pp 2-3. (Hereafter cited: Transcript, Udorn Meeting.)

26. (S) Unpublished Rprt, Col Benton K. Partin and 1st Lt Daniel T. King, DOA, 7AF, "Impact of In-Country/Out-Country Force Allocations on Interdiction Effectiveness", 6 Sep 68.

27. (S) Rprt, MACJ-341, "Quarterly Evaluation, 1 Apr - 30 Jun 68, 18 Aug 68, pg 5.

28. (S) Unpublished Rprt, Col Benton K. Partin and 1st Lt Daniel T. King, DOA, 7AF, "Impact of In-Country/Out-Country Force Allocations on Interdiction Effectiveness", 6 Sep 68.

29. (TS/NF) Unpublished Rprt, Capt Edward Vallentiny, CHECO, 7AF, "USAF Operations from Thailand, 1 Jan 67 to 1 Jul 68", 24 Aug 68, pp 40-41.

30. (S/NF) WAIS, 7 Dec. 68.

31. (S/NF) WAIS, DIP, 7AF, "Bat Lake Road", 22 Jun 68, pg 3.

32. (S/NF) WAIS, 7 Dec 68.

33. (S/NF) PACOM Intelligence Digest, Maj Jack Brunton, CINCPACAF, "Interdiction of Route 137", pg 3.

34. (S) Ltr, Col Leroy J. Manor, Comdr, 37th TFW to DOC, 7AF, subj: COMMANDO SABRE Operations, 12 Aug 68, w/Atch;
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(TS) Ltr, DITD, Hq PACAF to DOTEC, subj: Project CHECO Rprt, "Interdiction in RP-I: 1968 (U)", 30 Aug 69. (Hereafter cited: DITD Letter.)

36. (TS/AFEO) Interview, Brig Gen George J. Keegan, Jr., DCS/Intelligence, 7AF, 2 Dec 68.
(TS) DITD Letter.

37. (C) Interview, Col Robert E. Pater, Chief, TIGER HOUND/TALLY HO Div, 7AF, 26 Nov 68.

38. (TS/NF) CHECO Rprt, Hq PACAF, DOTEC, "Night Interdiction in Southeast Asia", 9 Sep 66, pp 33-37;
(TS/NF) CHECO Rprt, Hq PACAF, DOTEC, "Interdiction in SEA, 1965-1966", 25 May 67, pp 59-61.

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40. (TS/NF) Transcript, Udorn Meeting, pp 2-3.

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42. (S) Memo, Lt Col Paul J. English, DIT, 7AF, "Plan for Dividing Route Package I", 11 Jul 68.

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49. (TS) Msg, JCS to CINCPAC, "ARC LIGHT", 15 Jul 68.

50. (S) Form 4, Capt Paul F. Foley, DOA, 7AF, "Proposed Article on Intensified Interdiction in RP I and TALLY HO", 20 Sep 68.

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52. (S) Working Paper, DI, 7AF, "Interdiction in RP I", undated (Late June-Early July 1968). (Hereafter cited: Working Paper, DI, 7AF.)

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55. (S) Rprt, Col Victor N. Cabas, Comdr, 432d TRW, "End of Tour Report, 19 Sep 67 - 3 Sep 68", undated, pp 75-76.

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62. (C) Form 4, Col Robert E. Pater, Chief, TIGER HOUND/TALLY HO Div, 7AF, 14 Oct 68.

63. (S/NF) WAIS, DIP, 7AF, "Interdiction of Xom Ve", 12 Oct 68, pp 3-4.

64. (S) Wing Responses w/Form 4 Supporting Documentation.
(TS) DITD Letter.

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70. (TS) Ltr, Gen Creighton W. Abrams, COMUSMACV, to Comdr, 7AF, subj: Interdiction Operations, 30 Jul 68.

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74. (S) Interview, Maj Gen Gordon F. Blood, DCS/Operations, 7AF, 27 Nov 68.

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77. (S) Ltr, Col Benton K. Partin, Dir, DOA, 7AF to Brig Gen Robert J. Holbury, DOC, 7AF, subj: Evaluation of 30-Day Intensified Interdiction Effort in RP-I and TALLY HO", 29 Sep 68, pg 1.

78. (S) Form 4, Col Robert E. Pater, Chief, TIGER HOUND/TALLY HO Div, 7AF, "Dropping on Alternate Interdiction Points", 12 Sep 68.

79. (S) Interview, Maj Gen Gordon F. Blood, DCS/Operations, 7AF, 27 Nov 68.

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81. (S/NF) WAIS, DIP, 7AF, "AAA in the Interdiction Campaign", 26 Oct 68, pp 2-3;
(S/NF) WAIS, DIP, 7AF, "7AF Summer Interdiction Program", 7 Dec 68, pg 10.

82. (S) Ltr, Col Leroy J. Manor, Comdr, 37th TFW to Comdr, 7AF, subj: COMMANDO SABRE Operations, 22 Aug 68;
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(S) Ltr, Col John M. Winkler, Comdr, 7th ACCS, subj: RP-I Test Results (C), 16 Aug 68.

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85. (S) Rprt, Col Victor N. Cabas, Comdr, 432d TRW, "End of Tour Rprt, 19 Sep 67 - 3 Sep 68", undated, pp 75-76.

86. (S) Wing Responses.

87. (S) Rprt, Col Victor N. Cabas, Comdr, 432d TRW, "End of Tour Rprt", undated, pg 145.

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90. (S) Ltr, Col Frank Grossman, Chief, DOCR, 7AF to DOC, subj: DOCR Input to General Blood's "End of Tour Report", 17 Oct 68.

91. (TS/NF) Transcript, Udorn Meeting, pp 2-3.

92. (S) Msg, 7AF to 432d TRW (General Keegan to Colonel Brown), "Use of Experimental Ordnance", 15 Oct 68;
(S/NF) WAIS, DIP, 7AF, "7AF Summer Interdiction Program", 7 Dec 68, pg 4.

93. (S) Ltr, Brig Gen Robert J. Holbury, Dir, DOC, 7AF, to Comdr, 432d TRW, subj: Interdiction Plan, 29 Oct 68.

94. (S) Ltr, Col Benton K. Partin, Dir, DOA, 7AF to Brig Gen Robert J. Holbury, DOC, 7AF, subj: Evaluation of 30-Day Intensified Interdiction Effort in RP-I and TALLY HO, 29 Sep 68;

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(S) COA 68/12 Rprt, pg 17.

95. (S) COA 68/12 Rprt, pg 8.

96. (S/NF) WAIS, 7 Dec 68.

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98. (U) Rprt, 20th Weather Squadron, 1st Weather Wing, "Climate of North Vietnam", Jun 65, pg 81.

99. (S/NF) WAIS, DIP, 7AF, "7AF Summer Interdiction Program", 7 Dec 68, pg 4.

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102. (S) DOA 68/15 Rprt, Capt Charles A. Poplinger, DOA, 7AF, "Effective Ordnance for Destroying Waterborne Logistic Craft by Direct Air Attack", 1 Nov 68, pg 25.

103. (S/NF) WAIS, DIP, 7AF, "7AF Summer Interdiction Program", 7 Dec 68, pg 4.

104. Ibid.

APPENDIX I

USAF STRIKE SORTIES IN NORTH VIETNAM
Sep 66 - Oct 68

DATE	RP-I	OTHER	TOTAL NVN
Sep 1966	3,912	2,464	6,376
Oct	3,645	1,287	4,932
Nov	2,369	1,312	3,681
Dec	2,861	1,268	4,129
Jan 1967	2,336	1,120	3,456
Feb	2,487	428	2,915
Mar	3,599	923	4,522
Apr	2,926	1,313	4,239
May	3,542	1,709	5,251
Jun	3,659	2,502	6,161
Jul	3,591	2,437	6,028
Aug	4,615	1,938	6,553
Sep	3,825	1,216	5,041
Oct	2,357	1,808	4,165
Nov	2,238	1,071	3,309
Dec	1,971	705	2,676
Jan 1968	1,962	968	2,930
Feb	1,311	529	1,840
Mar	1,018	223	1,241
Apr	2,848	2	2,850
May	3,160	4	3,164
Jun	4,090	-	4,090
Jul	6,506	6	6,512
Aug	6,340	22	6,362
Sep	5,202	14	5,216
Oct	5,078	26	5,104

SOURCE: OPREP 5, 7AF

APPENDIX II

7AF SUMMER INTERDICTION PROGRAM
by
Brig. Gen. George J. Keegan, Jr., DCS/Intelligence

On 14 July, the 7AF initiated its "Summer Interdiction Campaign" as an emergency effort to preempt the enemy's logistic preparation for the "Third General Offensive."

This campaign succeeded in its objectives. Enemy truck traffic moving into South Vietnam and Laos was brought to a virtual standstill; the enemy's water-crossing points were successfully interdicted; and the enemy's net through-put of logistics supplies was reduced to well below his minimum consumption requirements, both in Laos and in the two Northern Corps areas of South Vietnam. Further, the success of this Campaign establishes beyond question the magnitude of the enemy's logistic dependence upon Cambodia. With the effective closure of his North Vietnam supply system, the enemy has been forced to rely almost exclusively upon Cambodia for his logistics support of combat operations in South Vietnam.

In many respects, the 7AF "Summer Interdiction Campaign" represents a sharp break with previous interdiction efforts and tactics. No responsible airman has ever claimed that more than 15 to 25 percent of an enemy's logistics flow could be impeded successfully by air action employing conventional weapons. Secondly, the campaign established beyond doubt that by heavy concentration of effort against non-bypassable choke points, the enemy's traffic flow cannot only be interdicted effectively but it can be done so without unacceptable attrition from the enemy's concentration of anti-aircraft defenses. Two notes of caution are essential: First, this campaign would not have been nearly so successful had it not been for the U.S. Navy's successful blunting, screening and channeling of the enormous logistic input from the 19th parallel southward to the 7AF area of responsibility in Route Pack I. Second, the natural geography of Laos does not lend itself to the effective impedance of flow which was possible in Route Pack I. There are few good non-bypassable road segments in Laos. Only the availability of a large commitment of fighters, B-52s and improved munitions, such as land mines, can possibly compensate for the disadvantages of the Laotian terrain.

The most utilitarian aspect of the 7AF Campaign was its simplicity. Six non-bypassable choke points were selected for attack - three on Route 15 leading toward the Mu Gia Pass, one on Route 101 connecting 15 with Route 137 and the east coast of Route Pack I, and two points on Route 137 leading into Laos through the Ban Karai Pass. Also, the Navy's experience regarding the effectiveness of the Mark-36 destructor mine against water-crossing points was exploited fully. Since all north/south traffic along the east coast of Route Pack I must cross four basic waterways, an effort was made to exploit this enemy vulnerability. Mark-36s were seeded on a daily basis at each of several major water-crossing ferry points linking the north with the south. Night reconnaissance was utilized over

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each of the land and water points in order to detect the enemy's efforts to adapt to the interdiction. As the enemy changed his ways, 7AF tactics were immediately adjusted to frustrate the enemy's efforts.

The decision to concentrate upon the impedance of flow by choking traffic points was the most important decision of the campaign. This hard decision was based upon two experiences: First, fighter bombers operating without forward air controllers at night in a densely defended environment have great difficulty finding and killing trucks. Secondly, the experience of the enemy's pre-Tet and post-Tet offensives made clear the enemy's heavy dependence upon the continued flow of truck traffic in order to support large scale offensives. In 1967 and 1968, the enemy converted his fighting forces to modern conventional weaponry. The insatiable logistics demands of heavy mortars, modern rocket weapons, and a complete family of light infantry automatic weapons increased the enemy's reliance on a massive flow of truckborne logistics in order to sustain effective military operations. The enemy's five month traffic build-up through Laos for preparation of the Tet Offensive was the first case in point. His traffic build-up for the post-Tet offensive reached unprecedented proportions when over 14,000 trucks were observed moving through Laos in the month of April. Seventh AF destroyed nearly 1,500 of them - an all-time record. When IGLOO WHITE sensors first detected a large surge of enemy truck traffic in late June and early July, it was clear that the enemy expected to move an even greater volume of trucks for support of this ill-fated "Third General Offensive." It was this flow which 7AF recognized must be impeded.

The knowledge that the enemy moved some 100,000 tons of supplies in preparation for the Tet Offensive plus the fact that many thousands of trucks - freed of support requirements north of the 19th parallel could suddenly be moved south, added a great sense of urgency to 7AF interdiction planning.

The original campaign plan conceived of five concurrent phases. First, a SAM-AAA suppression phase was designed to make the area north of the DMZ permissive for sustained B-52, fighter-bomber, and photo reconnaissance operations. Secondly, a heavy commitment of B-52 strikes against the enemy's previously invulnerable truck parks, storage areas and transshipment points - hidden by jungle canopy - was planned. This phase of the campaign was not approved by higher authority. The interdiction phase, per se, was designed to impede flow by choking a few non-bypassable points. It was also hoped this would force the enemy's trucks eastward toward the flat coastal plain away from the sheltered inland routes to Laos. As the flow of enemy trucks decreased, armed reconnaissance sorties were diverted to strikes against choke points. The fifth phase, which stressed night reconnaissance, proved most effective in thwarting the enemy's efforts to move by night.

After three weeks of intensive bombing, in July and early August, enemy traffic along the infiltration LOCs was reduced 33 percent. As the enemy's traffic was noted being delayed at water-crossing points along the Song Troc Waterway, Mark-36 seeding was intensified. Night attacks against these points forced the enemy to abandon his convoy system and to dump his cargo along the

water's edge. Attacks against these supplies at night quadrupled the number of secondary explosions and fires recorded. By the latter part of August, Routes 137 and 15 were closed to through traffic approximately 50 percent of the time. Key mountain passes were pulverized into basins of gravel. When the rains of typhoon "Bess" struck Route Pack I on 4 September, these normally well drained interdiction points became quagmires of mud. From then until 1 November, due to continued all-weather bombing of the six main interdiction points, Route 15 was closed to through-put better than 95 percent of the time and Route 137 has been closed more than 80 percent of the time.

The results achieved either for this war or any previous war were unprecedented. A 90 percent reduction of the enemy's net logistic tonnage through-put into Laos was accomplished. The enemy's tonnage was reduced from an approximate 340 tons per day in July to less than 35 tons per day in September. By October, this tonnage was effectively reduced to what men could carry into Laos on their backs. Overall, enemy traffic flow along infiltration routes was reduced by 97 percent - from 1,289 sightings in the period 10 to 23 July to fewer than 43 sightings between 16 and 30 October - the latter being confined almost exclusively to shuttling in support of road construction efforts between interdiction points.

The enemy's traffic build-up trend was reversed; the enemy was forced to use watercraft in ever increasing numbers and he was forced to confine his movements almost exclusively to critically needed ammunition and POL. As a result, significant numbers of watercraft were destroyed and damaged and the proportion of secondary explosions rose sharply. The enemy was forced to deplete his stockpiles in Route Pack I and Laos, his truck fleet was decimated, and finally, the complete closure of Ban Laboy Ford for more than 30 days virtually stopped all truck traffic into Laos during the month of October.

The Target System: The following efforts were applied against the enemy's water-crossing points in Route Pack I. The bridge at Quang Khe linking Route 1A with the DMZ was kept destroyed. In all, 242 strikes were delivered against the west Quang Khe water crossing and 660 Mark-36 mines were seeded. Access points along the Song Troc Waterway were interdicted repeatedly and massive stores of supplies destroyed through night attacks with CBU munitions. The Xuan Son Highway Ferry - one of the two links connecting Route 101 and 137 - received 276 strikes and 430 Mark-36 destructors.

The principal highway ferry and pontoon bridge at Phuong Chay was hit with 307 strikes and 512 mines. The pontoon bridge was destroyed, thus denying the enemy his main access to Laos during the Southwest Monsoon period. The enemy was forced to move his trucks one at a time on individual ferries constructed of pontoon bridge sections. These were destroyed as they could be found at night. From 14 July to 30 October, more than 8,000 mines were delivered by Marine A-6s and Air Force F-4s against these water crossings and a few land interdiction points.

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As dramatic evidence - from reliable sources - was received on the difficulty the Mark-36 was causing the enemy, seedings were intensified in the Ron Ferry area, the Song Giang and Song Troc Waterways, and in the Kien Giang Canal system at Dong Hoi. From late September on, virtually all truck traffic attempting to transit these water-crossing points was halted. As the enemy undertook to shift to waterborne logistics craft, flow was heavily attrited by the MK-36.

Even greater success was achieved against the non-bypassable interdiction points on Routes 15, 101, and 137. A mountain pass 21 nautical miles north of Mu Gia on Route 15C was struck 391 times; 69 cuts and 13 landslides were produced. From 14 July to 30 October, this point was closed 58 percent of the time. From 4 September on, this point was closed 100 percent of the time. The enemy was detected in September building a lengthy bypass along an old abandoned rail line. As a result, 328 strikes were directed against this bypass which was closed 37 percent of the time.

Xom Ve was the second interdiction point selected just above the junction of Route 15 and Route 101. A total of 1,164 strikes achieved 393 cuts and 31 landslides. Xom Ve was closed 45 percent of the time from 14 July and better than 95 percent of the time from 4 September onward. (See WAIS 12 October 1968). In late August, FACs discovered a steep defile above a narrow gorge 11 nautical miles north of Mu Gia Pass. This point was then struck 853 times; 186 cuts and 47 landslides were achieved. "La Trong" was closed 73 percent of the time and was virtually impassable throughout most of September and October. One point on Route 101 - midway between Routes 15 and 137 - was attacked by 627 strikes and was closed 37 percent of the time. In an experiment, 814 Mark-36 destructors were seeded in an effort to test the effectiveness of these mines against landpoints. Since no conclusive evidence was produced, interdiction with hard ordnance was resumed in September.

The main interdiction point on Route 137 - over which most of the enemy's truck flow into Laos moves during the seven month Southwest Monsoon - was hit by 1,348 strikes. In all, 256 cuts and 101 landslides were inflicted for an average closure rate of 62 percent. This point, "Lang Va," was closed better than 80 percent of the time from late September through the end of October. Co Tioi, a secondary interdiction point close to the Lao Border on Route 137, was attacked by 523 strikes and closed 33 percent of the time.

The Ban Laboy Ford in Laos links Route 137 with Route 912. During the Southwest Monsoon, from May to November, Route 912 is the enemy's main road into Southern Laos from North Vietnam. For nearly three years, the enemy trucks have utilized an underwater rock causeway to transit the Ban Laboy Ford. Until recently, this causeway had never been successfully damaged or fully interdicted.

Ban Laboy was protected by bad weather throughout the period of this campaign. During July and August, daily radar bombing attacks by fighter bombers were conducted against this Ford without visually observed results. Sensors

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implanted to the north and south of this Ford confirmed in mid-August that the enemy was having great difficulty moving his trucks across the Ford. Of 22 convoys attempting to transit the Ford in mid-August, all were forced to dump their supplies north of the Ford and return to North Vietnam. Only four convoys were detected coming up from south of the Ford. As a consequence, it was presumed that the enemy was forced to dump up to 8,000 tons of supplies in the truck parks north of Ban Laboy Ford. These truck parks were in an area restricted from B-52 attacks because of the existence, in 1966, of an alleged PW camp along this route. While awaiting authority from the U.S. Embassy in Vientiane to strike at these supplies, heavy airstrikes were scheduled against the Ban Laboy Ford. It was thus hoped to keep the enemy's supplies from being moved south until they could be struck.

On 18 September, 30 B-52s dropped 900 tons of bombs against the Ban Laboy complex. B-52 crews reported 73 secondary explosions, ranging from 5 to 20 times normal size in the target area. Fighter strikes continued throughout the day. On the following day, intelligence sources confirmed that the enemy had been hurt seriously. Also, it was learned that intensive efforts were being made to open up the Ban Laboy complex so that the enemy could move his trapped supplies southward into Vietnam where his beleaguered forces were running desperately short of ammunition. A secret camouflaged cable bridge and a separate cable ferry crossing were destroyed by the above strikes.

As a result of this evidence, the case for attacking the truck parks north of Ban Laboy was reconsidered. Re-examination of old records established that the existence of the alleged PW camp (where Lt Dengler, USN, had been imprisoned in 1966) was not valid. Objections to the strikes were lifted. Massive B-52 strikes followed shortly thereafter.

On 1 October, 24 B-52s again directed their efforts against the Ford complex. SAC reduced the size of its normal bomb train from 4,500 feet to 760 feet for six strikes against the Ford itself. The B-52s scored a "Bull's Eye," thus destroying two-thirds of the underwater rock causeway for the first time. On 2 October, F-105 fighters destroyed the remaining third of the Ford by direct hits with 2,000 pound bombs. The Ford remained closed to all through traffic for the next 30 days. Between 18 September and 2 October 1968, 2,339,750 pounds of ordnance were delivered against this strategic complex. During this period, the enemy moved in two engineer construction battalions in a desperate bid to reopen this strategic gateway to Southern Laos. These efforts were frustrated by heavy attacks during daylight hours and by extremely effective harassment at night by A-1s dropping 260-pound proximity fuzed bomb clusters.

Reliable sources have since confirmed that for the five month period starting 1 June 1968, the enemy moved an average of only 12 trucks a day across this Ford, the largest number being moved prior to mid-September, an average of 175 trucks per week shuttled to the north and south of the Ford. Following the airstrikes initiated on 17 September, this shuttling activity was reduced first to 20 trucks per week and then finally to fewer than 15 per week, none of which were able to transit the Ford.

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From 14 July to 30 October, 32,577 sorties were flown in the Summer Interdiction Campaign. Of these, 5,601 were flown under ground radar control, while 2,205 sorties released utilizing internal radar bombing systems. B-52 sorties amounted to 920.

A total of 98,040 tons of munitions was dropped, including 24, 840 tons by the B-52s. The following types and tonnages of munitions were expended: 56,900 tons of general purpose bombs; 9,800 tons of fragmentation and cluster munitions; 4.150 tons of incendiaries; and 2,350 tons of Mark-36 destructor mines. Results were: 1,017 trucks destroyed and 588 damaged; 650 waterborne logistics craft destroyed and 712 damaged; 570 landslides and 4,006 road cuts achieved at six primary choke points; better than 7,000 tons of ammunition, POL and inflammables estimated destroyed by 5,364 secondary explosions and 11,960 secondary fires.

The percentage of air effort devoted to interdiction in July was 20 percent of the available forces, with 56 percent in the month of October. Thirty-four aircraft were lost in combat for a loss rate of 1.2 per thousand sorties. A total of 4,150 reconnaissance sorties was flown; 4,000,000 feet of film were exposed plus another 800,000 feet of gun-camera film utilized.

It is estimated that the enemy was denied approximately 35,000 tons of supplies flowing through Route Pack I. Net tonnage through-put was reduced by better than 90 percent. The enemy's net tonnage through-put into Laos was reduced from approximately 340 tons per day in early July to well below 35 tons per day in October. Much of the latter was carried on foot.

The decline in truck sightings on key routes into Laos shows a similar traffic reduction. Traffic reduction by two week increments for Routes 15, 101, and 137 are shown in the table below:

Visual Sightings on Key Routes in Laos

	15	101	137	Total	Percent Reduction
10 Jul-23 Jul	255	736	298	1,289	
25 Jul-6 Aug	316	302	196	866	33
7 Aug-20 Aug	631	289	72	992	23
21 Aug-3 Sep	184	273	41	498	61
4 Sep-17 Sep	48	150	90	288	78
18 Sep-1 Oct	26	106	29	171	87
2 Oct-15 Oct	46	75	15	136	89
16 Oct-29 Oct	23	16	4	43	97

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As a consequence of continuous interdiction on six non-bypassable points, Routes 15 and 137 were closed 39 percent and 53 percent, respectively, during the month of August. During the month of September, these two routes were closed 74 percent and 82 percent of the time, respectively. From 16 September to 1 November, Route 15 was 100 percent closed to all through traffic. Route 137 was closed between 85 and 90 percent of the time during October. The Ban Laboy Ford was closed continuously from 1 October through 1 November. The one point on Route 101 connecting Routes 15 and 137 was closed 40 percent of the time from mid-September to 30 October.

By 15 July, the enemy was moving over 550 trucks per day. By the end of that week, the enemy was moving over 1,100 trucks per day in the greatest surge of trucks traffic ever noted. It was obvious at this point that the enemy's Third General Offensive would probably be his greatest unless this flow were impeded. By 21 July, after one week of sustained interdiction, the enemy's traffic was cut in half - to less than 550 trucks per day. By 26 July, traffic was reduced further to below 335 trucks per day. From 14 August on, the enemy's traffic was reduced to well below 150 trucks per day, consisting mostly of shuttling in support of road repair. With the advent of heavy rain on 4 September, several of the interdiction points were totally closed for many weeks. By 23 October, fewer than 25 trucks a day were moving. Within 24 hours of the bombing halt on 1 November 1968, sensors detected over 235 trucks.

As the enemy's flow of trucks decreased, greater proportions of ammunition and POL had to be carried in the remaining few trucks. This was reflected in the steep increase in secondary fires and explosions from 300 per week to over 1,300 per week. Reliable sources indicate that the enemy attempted to move over 4,000 tons of ammunition south of the 19th Parallel in September and over 5,000 tons in October.

The interdiction campaign had an immediate and dramatic impact upon the reduction in the number of rounds of enemy mortar, artillery, and rocket fire in South Vietnam. During February, the enemy fired approximately 34,000 rounds within South Vietnam, and some 25,000 in the month of May. With the start of the campaign on 14 July, enemy fire was reduced to nearly 8,000 rounds in July and in October. It is estimated that within seven days of a cessation in bombing, the enemy, through a reopening of his supply lines, could once again increase his firing of mortar, artillery, and rockets to over 35,000 rounds per month.

The accurate measurement of logistic flow is extremely difficult. It is apparent from the agreed estimates on the enemy's daily requirements in South Vietnam, his external inputs from the North, and the reduction of flow achieved that an enormous gap remains to be rationalized by the intelligence community.

For instance, it is estimated that in September the enemy's minimum daily tonnage requirement for food and ammunition in South Vietnam averaged about 134 tons per day. From photography of road, rail and waterborne traffic moving into Thanh Hoa and Vinh, it is possible to estimate that somewhere between 49,500

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tons to a possible high of 93,400 tons per month of tonnage are being shipped from the North. From the low net tonnage input into Laos and South Vietnam achieved by the enemy in October - less than 35 tons per day - it is apparent that an extraordinary reduction in flow was brought about by the combined effects of the U.S. Navy and Air Force interdiction campaign.

When these reductions are combined with the significant attrition and decimation of enemy forces in South Vietnam by B-52, TAC AIR, artillery action and aggressive ground sweeps, the logistics effects are further compounded. During the four month period from July, ground forces discovered and destroyed over 270 major enemy caches. Over 943 tons of munitions were captured or destroyed in these caches, an average of 10 tons per day. Since July, over 45,000 enemy have been killed in action, not including an estimated 5 to 8,000 combat personnel per month possibly killed in Route Pack I.

It is apparent from the reduction in logistics flow to the battlefield and the enormous attrition inflicted within the battle area of South Vietnam that a great disaster was inflicted upon the enemy. This is clearly evidenced by the recent forced exodus of several enemy regiments into rear base areas and out of country into Cambodia, Laos and North Vietnam. Information from reliable sources, prisoners and captured documents indicates that most of these units were suffering from serious food, ammunition and medical supply shortages.

Many lessons have been or are being learned as a consequence of the "Summer Interdiction Campaign." One of the most significant relates to the nature of interdiction itself and the comparative costs of impeding enemy flow by attempting to kill trucks or by striking at non-bypassable choke points when these are available, such as in Route Pack I. The truck killing method of impeding flow has been found to be more expensive by a ratio on the order of 13 to 1 over the method of choking non-bypassable points. When computing the sorties required to kill trucks, aircraft attrition, ordnance expended and aircraft operating costs, the gross cost of impeding flow by this method amounts to about $13,000 per ton. Comparable costs of the "choking" method amounted to approximately $1,000 per ton.

Significant lessons were also learned about the effectiveness of Mark-36 destructor munitions when seeded in sufficient density against major water-crossing points. The evidence of effectiveness against land routes is not conclusive.

Aircraft attrition was surprisingly light. The enemy did concentrate his anti-aircraft defenses as expected. These defenses were effectively neutralized with CBU munitions or by changes in tactics as necessary. In fact, the attrition sustained in the heavily defended areas of Route Pack I was the lowest on record. Significant lessons were also learned about the effectiveness of ground controlled and integral radar bombing attacks by fighter bombers during bad weather. One of the most important decisions of the campaign was to continue bombing of the interdiction points by radar during the first 21 days of October when weather and visibility conditions were extremely poor. Over 70 radar

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strikes a day were fragged. Photography of all the interdiction points on 21 and 22 October confirmed that all but one had been effectively closed by radar bombing. It was thus clearly established that had operations been continued during the bad weather period of the Northeast Monsoon starting in 1 November, there was reasonable probability of keeping access points to Laos closed to significant amounts of through traffic.

One of the most significant questions raised by this campaign is whether or not a similarly successful impedance of flow could be attained in Laos throughout the dry season. There are very few non-bypassable points within Laos. The lack of such points clearly cannot be compensated for by the use of sensors. Only the massed use of fighters and B-52s on a daily basis against points, such as Ban Laboy and occupied truck parks, can compensate for the disadvantage of terrain in Laos. Similarly, such efforts are seriously impaired by the lack of suitable munitions such as efficient truck killers and land mines. Not one successful land mine has been available for use during the past three years. Consequently, the extent to which the enemy's flow through Laos can be impeded is difficult to forecast. Presently, five points have been selected for sustained heavy day and night attacks in Laos in an effort to exploit the valuable experience of the Summer Campaign in Route Pack I. These points are located at Ban Laboy on Route 912, Ban Pha Nop south of Mu Gia Pass, and at three secondary points on Routes 911, 914 and 912. As a consequence of very heavy strikes upon these few points between 1 and 10 November, Laotian truck traffic has been reduced by better than 50 percent. Fighter strikes augmented by 30 percent of available B-52 forces, have thus far effectively blocked all truck movement entering Laos through the Ban Laboy Ford complex on Route 912. Similar efforts to block enemy traffic below Mu Gia Pass are now underway.

On 4 November, three days following the bombing halt, two short reconnaissance flights over Routes 15, 101, and 137 confirmed that all of the interdiction points leading into Mugia and Ban Karai Passes had been repaired and were in extensive use by enemy trucks. One convoy of over 40 trucks was spotted on Route 15.

The virtually complete interdiction of NVN truck traffic into Southern Laos and South Vietnam is now fully supported by extensive photographic, sensor and visual documentation. Between 14 July and 1 November, the enemy's traffic flow was reduced at least ten fold and the enemy was denied the logistics necessary for his so-called "Third General Offensive."

Successful blockade of the North now resolves beyond all reasonable doubt the enemy's enormous dependence upon the Port of Sihanoukville and Cambodia for most of his munitions and supplies in III and IV Corps areas of South Vietnam. With the complete closure of the routes from the North and through Laos during the summer of 1968, Cambodia became the sole source of support for the enemy's extensive combat operations in the South.

The cessation of bombing attacks against North Vietnam on 1 November 1968 thus brought to a halt one of the most successful interdiction campaigns in

modern history. While the true magnitude of the logistic disaster inflicted upon the enemy may never be fully known, the data available thus far may help to explain Hanoi's growing urgency to bring about a cessation of the bombing.

GLOSSARY

AAA	Antiaircraft Artillery
ABCCC	Airborne Command and Control Center
AFR	Air Force Regulation
ART	Armed Reconnaissance Target
BDA	Bomb Damage Assessment
CAP	Combat Air Patrol
CBU	Cluster Bomb Unit
CEP	Circular Error Probable
CINCPAC	Commander-in-Chief, Pacific Command
CINCPACAF	Commander-in-Chief, Pacific Air Forces
CINCPACFLT	Commander-in-Chief, Pacific Fleet
CINCSAC	Commander-in-Chief, Strategic Air Command
COA	Office of Operations Analysis
COMUSMACV	Commander, U.S. Military Assistance Command, Vietnam
D/D	Destroyed/Damaged
DOA	Directorate of Tactical Analysis
FAC	Forward Air Controller
JCS	Joint Chiefs of Staff
LOC	Line of Communication
MACV	Military Assistance Command, Vietnam
mm	millimeter
NVA	North Vietnamese Army
OpOrd	Operations Order
OPlan	Operations Plan
PACAF	Pacific Air Forces
POL	Petroleum, Oil, and Lubricants
Recon	Reconnaissance
RP	Route Package
SAC	Strategic Air Command
SAM	Surface-to-Air Missile
SEA	Southeast Asia
SLAM	Seek, Locate, Annihilate, and Monitor
SLAR	Side-Looking Airborne Radar

TCA	Traffic Control Area
TCP	Traffic Control Point
TF	Task Force
TFW	Tactical Fighter Wing
TOT	Time over Target
TRW	Tactical Reconnaissance Wing
WAAPM	Wide Area Antipersonnel Mine
WAIS	Weekly Air Intelligence Summary

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